



EPA

UNITED STATES

ENVIRONMENTAL PROTECTION AGENCY

"...TO PROTECT HUMAN HEALTH AND SAFEGUARD THE NATURAL ENVIRONMENT..."

EPA Region 5 Records Ctr.



257385

SAUGET SITES I AND N

**CAHOKIA,
ST. CLAIR COUNTY, ILLINOIS**

SITE INVESTIGATION REPORT

**TDD No.: S05-0302-016
Contract Number: 68-W-00-129**

Prepared for
**U.S. Environmental Protection Agency
Region 5 Remedial Branch
77 West Jackson Boulevard
Chicago, IL 60604**

Prepared by:

Tt Tetra Tech EM Inc.

**SITE INVESTIGATION REPORT
SAUGET SITES I AND N
SAUGET, ST. CLAIR COUNTY, ILLINOIS**

Prepared for

**U.S. ENVIRONMENTAL PROTECTION AGENCY
Region 5 Remedial Branch
77 West Jackson Boulevard
Chicago, IL 60604**

Date Prepared:	November 25, 2003
TDD No.:	S05-0302-016
Contract No.:	68-W-00-129
Prepared by:	Tetra Tech EM Inc.
Tetra Tech START Project Manager:	Chad Gibson
Telephone No.:	(312) 946-6475
U.S. EPA Remedial Project Manager:	Nabil Fayoumi
Telephone No.:	(312) 886-6840

CONTENTS

<u>Section</u>	<u>Page</u>
1.0 INTRODUCTION	1
2.0 SITE BACKGROUND	2
3.0 SAMPLING ACTIVITIES	6
3.1 TRENCHING AND SOIL AND WASTE SAMPLING	6
3.2 GROUNDWATER SAMPLING	14
4.0 ANALYTICAL RESULTS	17
5.0 SUMMARY	19

Appendix

A	DATA SUMMARY TABLES
B	PHOTOGRAPHIC LOG

Attachment

CONTRACT LABORATORY PROGRAM DATA VALIDATION REPORTS

FIGURES

<u>Figure</u>	<u>Page</u>
1 SITE LOCATION MAP	3
2 SITE I AREA OF INTEREST AND PROPOSED TRENCH AND SAMPLING LOCATIONS	4
3 SITE N AREA OF INTEREST AND PROPOSED TRENCH AND SAMPLING LOCATIONS	5
4 SITE I AREA OF INTEREST AND ACTUAL TRENCH AND SAMPLING LOCATIONS ..	7
5 SITE N AREA OF INTEREST AND ACTUAL TRENCH AND SAMPLING LOCATIONS .	8



1.0 INTRODUCTION

The Tetra Tech EM Inc. (Tetra Tech) Superfund Technical Assessment and Response Team (START) was tasked by the U.S. Environmental Protection Agency (U.S. EPA) to perform a site investigation at Sauget Sites I and N, St. Clair County, Illinois, under Technical Direction Document (TDD) No. S05-0302-016. Specifically, START was assigned to compile available site information, develop a site safety plan, develop a soil and groundwater sampling plan, procure an excavation subcontractor, procure a Geoprobe™ contractor, collect on-site soil and groundwater samples, and prepare this site investigation report.

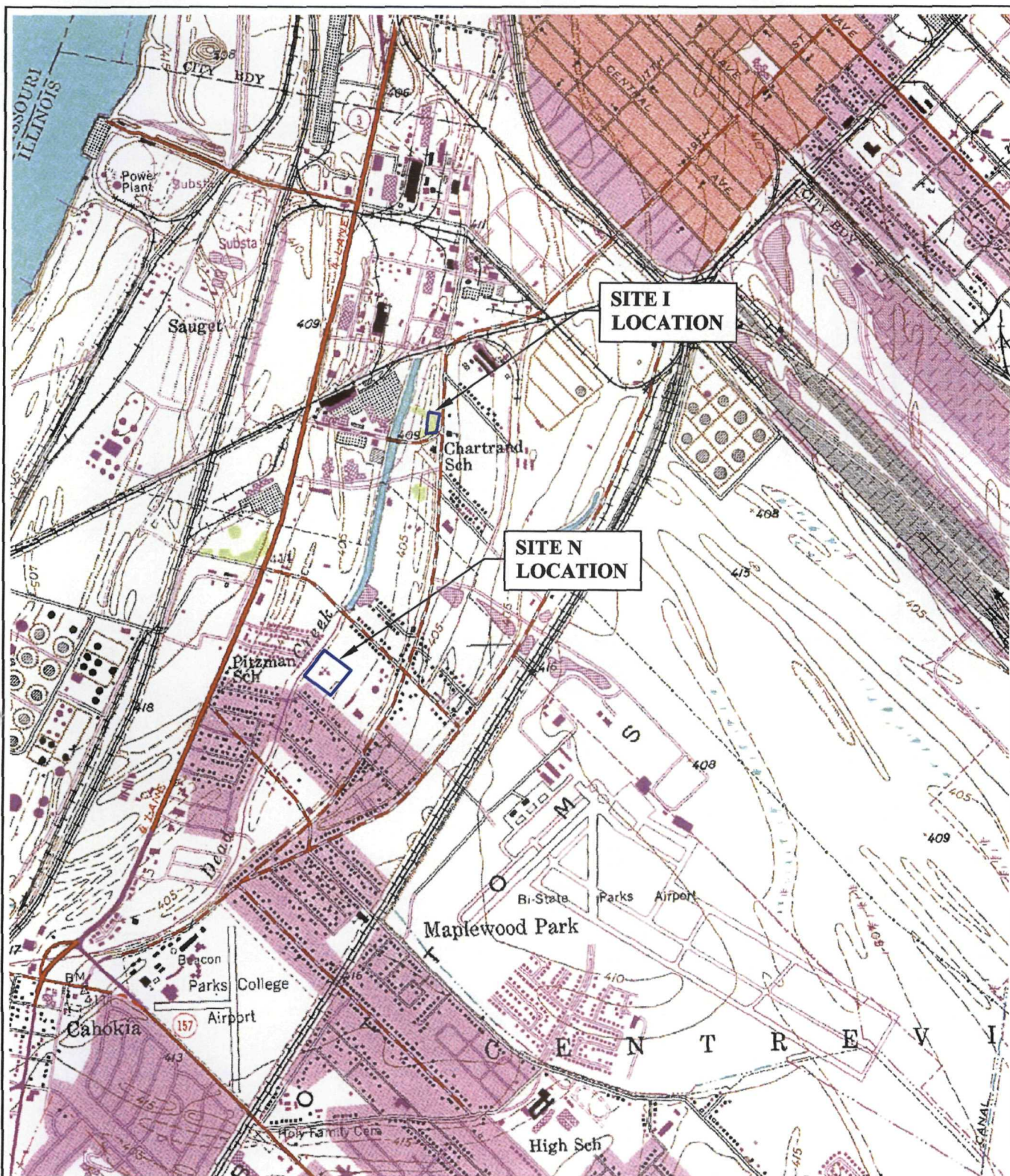
This report consists of four sections besides this introduction (Section 1.0). Section 2.0 discusses the site background, Section 3.0 discusses sampling activities, Section 4.0 discusses sample analytical results, and Section 5.0 summarizes the site investigation. This report also includes two appendixes and an attachment. Appendix A presents data summary tables, Appendix B presents a photographic log of site activities, and the attachment contains Contract Laboratory Program (CLP) data validation reports for the samples analyzed.



2.0 SITE BACKGROUND

Sites I and N are both located in Sauget, St. Clair County, Illinois (see Figure 1). Site I covers about 19 acres and was originally used as a sand and gravel pit that received industrial and municipal wastes. Site I was part of the “Sauget-Monsanto Landfill,” which operated from 1931 to 1957. Site I is bordered by Queeny Avenue to the south, Falling Springs Road and the village of Sauget municipal building (including the fire department to the east, Alton and Southern Railroads to the north and east). This investigation focuses on an area of interest at the eastern edge of Site I next to the Village of Sauget municipal building (see Figure 2). The remainder of Site I was investigated in July 2002 as described in a letter report prepared by Tetra Tech and dated February 26, 2003.

Site N was initially developed as a borrow pit in the 1940s and encompasses approximately 4 acres used to dispose of concrete rubble, demolition debris, and chemical waste solids and drummed materials. Site N is located east of Dead Creek Segment C, south of Judith Lane, north of Cahokia Street, and west of Falling Springs Road in the Village of Cahokia. The site is currently inactive. The fill may extend to 30 feet below ground surface. This investigation focuses on the borrow pit area (see Figure 3). Historical aerial photographs from 1950, 1955, 1960, 1977, and 1982 show that the borrow pit’s extent remained relatively the same over the years. Liquid impoundments within the pit vary in size from year to year. Site N currently receives runoff from the surrounding area.



0 1000 2000
SCALE IN FEET



SAUGET SITE I AND N
SAUGET, ST. CLAIR COUNTY, ILLINOIS
TDD NO. S05-0302-016

FIGURE 1
SITE LOCATION MAP

Prepared for:

By:

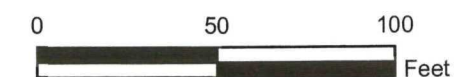


SOURCE: MODIFIED FROM U.S. GEOLOGICAL SURVEY 7.5-MINUTE SERIES TOPOGRAPHICAL MAP OF CAHOKIA, ILLINOIS, QUADRANGLE, 1954, PHOTOREVISED, 1993



Legend

-  AREA OF INTEREST
-  TRENCH LOCATION
-  GROUNDWATER SAMPLING LOCATION



SOURCE: MODIFIED FROM AERIAL PHOTOGRAPH OF SAUGET SITE I RECEIVED FROM ENVIRONMENTAL RESEARCH, INC., 1993.

SAUGET SITES I AND N
SAUGET, ST. CLAIR COUNTY, ILLINOIS
TDD NO.S05-0302-016

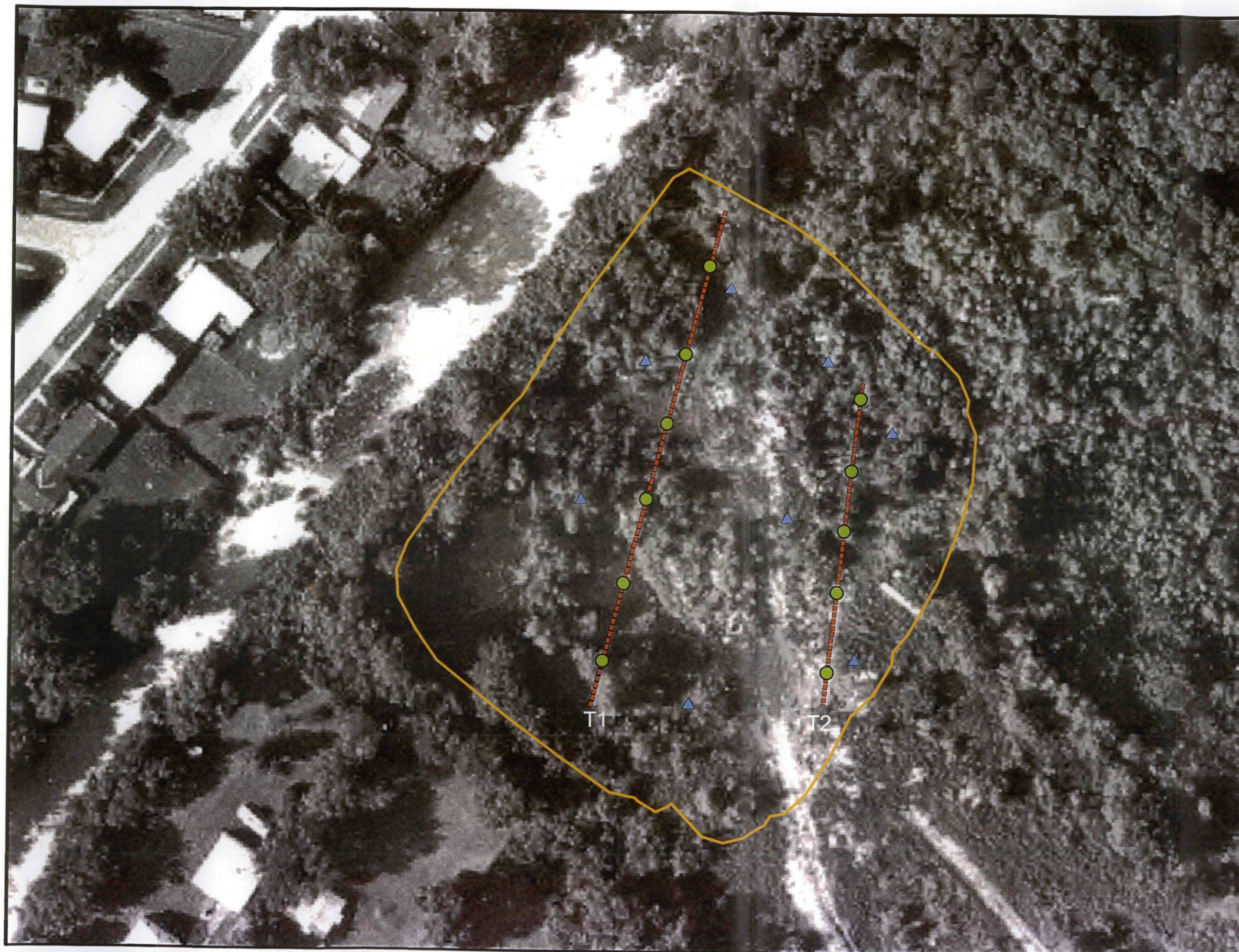
FIGURE 2
SITE I AREA OF INTEREST AND
ACTUAL TRENCH AND
GROUNDWATER SAMPLING LOCATIONS

Prepared for:



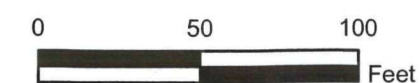
By:





LEGEND

- AREA OF INTEREST
- TRENCH
- SOIL SAMPLING LOCATIONS
- ▲ GROUNDWATER SAMPLING LOCATIONS



SOURCE: MODIFIED FROM AERIAL PHOTOGRAPH OF SAUGET SITE L RECEIVED FROM ENVIRONMENTAL RESEARCH, INC., 1993.

SAUGET SITES I AND N
SAUGET, ST. CLAIR COUNTY, ILLINOIS
TDD NO.S05-0302-016

FIGURE 3
SITE N AREA OF INTEREST AND
PROPOSED TRENCH AND
SAMPLING LOCATIONS

Prepared for:

By:



Tetra Tech EM Inc.

3.0 SAMPLING ACTIVITIES

The U.S. Department of Justice contracted Environmental Research, Inc. (ER), to compile historic aerial photographs of the Sauget area in order to identify area of Sites I and N formerly used as surface impoundments. The historical aerial photographs compiled by ER range in years from 1968 to 1982. Based on the aerial photographs, START and U.S. EPA originally identified one trench and two groundwater sampling locations at Site I and two trenches and eight groundwater sampling locations at Site N (see Figures 2 and 3). Some of the originally identified trenching and sampling locations were underneath trees or in areas containing debris not shown on the historical aerial photographs. Figures 4 and 5 show actual trench and sampling locations.

Site investigation activities were conducted at Sites I and N between October 6 and 9, 2003, and consisted of trenching and soil and waste sampling and groundwater sampling. Prior to trenching and sample collection, a Global Positioning System (GPS) unit uploaded with all planned sampling location coordinates was used to locate the trench and sampling locations. Specific activities associated with trenching and soil and waste sampling and with groundwater sampling are discussed below. Appendix A provides data summary tables for the samples collected, and Appendix B provides a photographic log of site conditions and activities.

3.1 TRENCHING AND SOIL AND WASTE SAMPLING

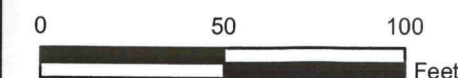
Trenching operations were conducted at Site I on October 7 and Site N on October 7 and 8. The exploratory trenches were excavated in order to determine the stratigraphy and to collect samples from surface impoundments at Sites I and N. The site investigation intent was not to determine the extent of contamination but only to identify the presence of contaminants. At Site I, Trenches T1, T2, and T3 were excavated in the historic impoundment area in the southern, central, and northern portions of Site I, respectively (see Figure 4). At Site N, Trenches T1, T1A, T1B, and T2 through T4 were excavated (see Figure 5). Trench T1 was excavated in the west portion of Site N, Trench T1A was excavated through a sand mound near the northern end of T1, Trench T1B was excavated along the northern portion of Site N, Trench T2 was excavated along the eastern portion of Site N, Trench T3 was excavated in the north-central portion of Site N between Trenches T1 and T2, and Trench T4 was excavated in the central portion of Site N south of Trench T3 and between Trenches T1 and T2.





LEGEND

- AREA OF INTEREST
- TRENCH
- APPROXIMATE SOIL SAMPLING LOCATIONS
- GROUNDWATER SAMPLING LOCATIONS



SOURCE: MODIFIED FROM AERIAL PHOTOGRAPH OF SAUGET SITE I RECEIVED FROM ENVIRONMENTAL RESEARCH, INC., 1993.

SAUGET SITES I AND N
SAUGET, ST. CLAIR COUNTY, ILLINOIS
TDD NO.S05-0302-016

FIGURE 4
SITE I AREA OF INTEREST AND
ACTUAL TRENCH AND
SAMPLING LOCATIONS

Prepared for:



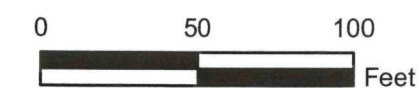
By:





Legend

- AREA OF INTEREST
- TRENCH
- APPROXIMATE SOIL SAMPLING LOCATIONS
- ▲ GROUNDWATER SAMPLING LOCATIONS



SOURCE: MODIFIED FROM AERIAL PHOTOGRAPH OF SAUGET SITE L RECEIVED FROM ENVIRONMENTAL RESEARCH, INC., 1993.

SAUGET SITES I AND N
SAUGET, ST. CLAIR COUNTY, ILLINOIS
TDD NO.S05-0302-016

FIGURE 5
SITE N AREA OF INTEREST AND
ACTUAL TRENCH AND
SAMPLING LOCATIONS

Prepared for:



By:



Each exploratory trench was advanced using a backhoe operated by Tetra Tech's subcontractor, Environmental Restoration. Soil and waste characteristics were noted, and the extent of potential contamination in the trench was assessed based on visual observation and organic vapor detection using a portable photoionization detector (PID) and flame ionization detector (FID). Once the depth interval to be sampled was identified, a grab soil sample was collected either directly from the backhoe bucket or from the soil stockpile. A dedicated sampler was used for samples submitted for volatile organic compound (VOC) analysis. The rest of the grab soil sample material was homogenized in a dedicated pan to form a composite sample, and the appropriate sample jars were filled.

Specific stratigraphic observations and sampling activities at each site are discussed below, including reasons for deviations from originally planned sampling locations.

SITE I

Trench T1 was excavated in a grassy area between the Sauget fire department parking lot and the Cerro Copper Products Company fence. Trench T1 was excavated in three sections starting at the southern end of the site, just north of Queeny Avenue and progressing north for a total length of about 125 feet.

Trench T1 advanced to about 12 feet bgs. The general stratigraphy of trench T1 is as follows:

- 0 to 1 foot bgs: topsoil
- 1 to 3 feet bgs: black soil with construction debris and sludge material
- 3 to 5 feet bgs: black soil with construction debris, battery casings, and catalyst beads
- 5 to 8 feet bgs: black soil with construction debris
- 8 to 10 feet bgs: black soil with construction debris
- 10 to 12 feet bgs: gray clay

In Section 1 of Trench T1, construction debris consisting of soil, concrete, brick, wood, and rubber hoses was encountered from 1 to 12 feet bgs. A moist gray clay was encountered at about 12 feet bgs. A yellow lime cake material was encountered in the debris on the west wall of Trench T1 at 1 to 3 feet bgs. The yellow material had a sulfuric odor and an FID reading of 98 parts per million (ppm). A white sludge material was encountered in the debris on the east wall of Trench T1 at 3 to 4 feet bgs. The white material had an FID reading of 130 ppm. A sample of the yellow and white material was collected about 20 feet north of the south end of Trench T1 (Site I-T1-SS01) as well as a matrix spike/matrix spike duplicate (MS/MSD) sample (Site I-T1-SS01-MS/MSD).

In Section 2 of Trench T1, construction debris consisting of soil, concrete, brick, glass, metal, and wood was encountered from 1 to 12 feet bgs. A white sludge material seam extends through Section 2 of Trench T1 at about 6 feet bgs. A moist gray clay was encountered at about 12 feet bgs. A green clayey cake material with cardboard was encountered in the debris on the west wall of Trench T1 at 2 to 4 feet bgs. The green material had an FID reading of 80 to 120 ppm. A black material with an organic odor was encountered in the debris on the west wall of Trench T1 at about 4 feet bgs. The black material had an FID reading of 320 to 416 ppm. A sample of the black material was collected from about 37 feet north of the south end of T1 (Site I-T1-SS02) as well as a duplicate sample (Site I-T1-SS02D). A black material with catalyst beads was encountered on the west wall of Trench T1 at 3 to 4 feet bgs. The catalyst beads were black and white and coated with an amber, oily material. A sample of the black material with catalyst beads was collected from about 40 feet north of the south end of Trench T1 (Site I-T1-SS03).

In Section 3 of Trench T1, more construction debris was encountered from 1 to 12 feet bgs. A moist gray clay was encountered at about 12 feet bgs. A yellow material was present in the construction debris and appeared to be the same material previously encountered in Section 1 of Trench T1. The material had an FID reading of 46 ppm. A black soil with broken battery casings and plastic was encountered from 2 to 5 feet bgs throughout Section 3 of Trench T1. A sample of black soil underneath the battery casings was collected (Site I-T1-SS04) at the north end of Section 3 of Trench T1. The northern end of Section 3 of Trench T1 was extended about 8 feet east to determine if the construction debris was present underneath the Sauget fire department building parking lot. No construction debris was encountered in this eastern section of the trench. Sections 1 through 3 of Trench T1 were backfilled with the material removed from the trench.

Two lines of trees west and northwest of the Sauget fire department garage in the location originally identified as central and northern portions of Trench T1 prevented the uninterrupted excavation of Trench T1. To avoid damaging the root systems of the trees, small trenches, Trenches T2 and T3, were excavated (see Figure 4). Trench T2 was excavated to about 7 feet bgs. Soil containing several pieces of concrete and asphalt was encountered, and Trench T2 was then backfilled. Trench T3 was excavated to about 7 feet bgs, no construction debris or waste was encountered. Trench T3 was then backfilled. Because visual observations and PID and FID readings indicated no contamination, no samples were collected from Trenches T2 and T3.

The four soil, duplicate, and MS/MSD samples collected from Site I were shipped to U.S. EPA CLP laboratories for analysis. Specifically, samples were shipped to ChemTech Consulting Group (ChemTech) in Mountainside, New Jersey, for target analyte list (TAL) metals analysis; Southwest Labs of Oklahoma (SWOK) in Broken Arrow, Oklahoma, for dioxins and furans analysis; Ceimic Corporation (Ceimic) in Narragansett, Rhode Island, for target compound list (TCL) volatile organic compounds (VOC), semivolatile organic compounds (SVOC), pesticides, polychlorinated biphenyls (PCB), and percent solids analysis; and URS Operating Services (UOS) in Denver, Colorado, for total metals x-ray fluorescence (XRF) analysis. Sample analytical results are discussed in detail in Section 4.0 and summarized in the tables in Appendix A.

SITE N

Trench T2 was excavated in the eastern portion of the area of interest progressing from south to north for a total length of about 200 feet. Trench T2 was excavated to about 10 feet bgs, where the groundwater table was encountered. Construction debris consisting of soil, brick, concrete, metal, and wood was encountered throughout the entire length of Trench T2, and creosote odors were sometimes detected. The general stratigraphy of the Trench T2 is as follows:

- 0 to 1 foot bgs: soil with gravel
- 1 to 10 feet bgs: construction debris
- 10 to 11 feet bgs: brown sand

Black soil mixed with construction debris was encountered in the southern portion of Trench T2. The black soil had an FID reading of 20 ppm. A sample of the black soil was collected (Site N-T2-SS01) from about 15 feet from the southern end of Trench T2. Black soil with an FID reading of 710 ppm and a PID reading of 175 ppm was encountered about 150 feet from the southern end of Trench T2. A sample of this black soil was also collected (Site N-T2-SS02). Trench T2 was backfilled with the material removed from the trench.

Trench T1 was excavated in two sections in the western part of Site N progressing from north to south for a total length of about 350 feet. Trench T1 was excavated to about 12 to 15 feet bgs, where the groundwater table was encountered. Construction debris consisting of soil, brick, concrete, metal, tires, and wood was encountered throughout the entire length of Trench T1, and creosote odors were sometimes detected. The general stratigraphy of the Trench T1 is as follows:



- 0 to 1 foot bgs: soil with gravel
- 1 to 12 feet bgs: construction debris
- 12 to 15 feet bgs: construction debris or brown sand

Five crushed drums were encountered about 10 feet south of the northern end of Trench T1 at 1 to 2 feet bgs. The drums were empty and had a PID reading of 0 ppm. Brown native sand was encountered at 2 to 3 feet bgs underneath the crushed drums. A grassy mound of brown sand was located just south the location where the five crushed drums were found. Trench T1 was excavated through the mound of sand to a depth of about 12 feet bgs, where the water table was encountered. No waste was encountered underlying the sand mound in Trench T1. A small trench (T1A) was excavated just east and parallel to Trench T1 through the sand mound. Trench T1A was excavated to 4 feet bgs, and only native sand was encountered. START concluded that there was no waste buried under the sand mound, and excavation of Trench T1 resumed.

Construction debris consisting of brick, concrete, metal, tires, and wood was encountered in Trench T1 southwest of the grassy mound of sand. Black stained soil with an FID reading of 24 ppm was encountered in the debris. A sample of the black soil was collected (Site N-T1-SS01). Large pieces of telephone poles, a car frame, a crushed drum, and a hot water heater were encountered in the construction debris in Trench T1 at 6 to 8 feet bgs near proposed boring TW05. The crushed drum had a waste oil odor and an FID reading of 72 ppm. Red brick and the water table were encountered at 12 to 15 feet bgs in Trench T1 near proposed boring TW05. Black soil with an FID reading of 300 ppm was also encountered in this area. A sample of the black soil (Site N-T1-SS02) was collected from Trench T1 near proposed boring TW05.

Just past boring TW05, Trench T1 turned southwest and followed the edge of tree line along Dead Creek. Construction debris was encountered throughout this section of Trench T1. Just north of boring TW04, a crushed drum and a white paint-like sludge were encountered at 6 to 8 feet bgs. The white paint-like sludge had an FID reading of 600 ppm. A sample of brown soil with some white paint-like sludge (Site N-T1-SS03) was collected from Trench T1 just north of boring TW04. Concrete, cement blocks, gravel, and wood debris were encountered south of boring TW04 in Trench T1. Brown and black soil with a FID reading of 10 to 70 ppm was mixed in with the debris. This section of Trench T1 was excavated to 10 feet bgs where the water table was encountered. The section of Trench T1 south of



boring TW04 was not excavated because it contained large trees. Excavation of Trench T1 resumed south of the trees near boring TW02 and progressed north toward boring TW04. Wood and brick were encountered at 1 to 2 feet bgs at the south end of Trench T1, and native brown sand was encountered at 2 to 3 feet bgs in the area. The south end of Trench T1 was then backfilled.

Trench T1B was excavated in the north portion of the area of interest perpendicular to Trench T1 in the area where crushed drums were found. Trench T1B was excavated from west to east for a total length of about 150 feet to about 4 to 8 feet bgs, where native brown sand was encountered. A large hole was excavated to about 15 feet bgs through the native sand to determine the depth to groundwater table. Groundwater was not encountered in Trench T1B. Large pieces of concrete, metal, wood, and crushed drums were encountered in Trench T1B. The general stratigraphy of the Trench T1B is as follows:

- 0 to 1 foot bgs: brown sand
- 1 to 4 feet bgs: crushed drums and construction debris
- 4 to 8 feet bgs: construction debris or brown sand

About 10 crushed drums were excavated from Trench T1B. The crushed drums were empty and had FID readings of 0 ppm.

Trenches T3 and T4 were additional trenches added by the U.S. EPA to further investigate the area of interest for contamination. Trench T3 was a small trench excavated in the north-central portion of the area of interest between Trenches T1 and T2. Trench T3 was excavated to about 12 feet bgs where the water table was encountered. Trench T3 contained construction debris as well as crushed drums and telephone poles. The crushed drums were empty and yielded FID readings of 25 and 97 ppm. A red and yellow clay material was encountered in Trench T3 at about 6 feet bgs and yielded an FID reading of 0 ppm. A sample was collected of the red and yellow clay material (Site N-T3-SS01).

Trench T4 was a small trench excavated in the north-central portion of the area of interest between Trenches T1 and T2. Trench T4 was excavated to about 10 feet bgs, and no water table was encountered. Construction debris was encountered in Trench T4 as well as two crushed drums. Trench T4 was then backfilled, followed by the backfilling of Trench T3. Crushed drums removed from Trenches T1, T1B, T3, and T4 were placed into Trench T1B near its intersection with Trench T1. The crushed drums were covered with sand. The remainder of Trench T1B was backfilled, followed by the backfilling of Trench T1.



The six samples collected from Site N were shipped to U.S. EPA CLP laboratories for analysis. Samples were shipped to ChemTech in Mountainside, New Jersey, for TAL metals analysis; SWOK in Broken Arrow, Oklahoma, for dioxins and furans analysis; Ceimic in Narragansett, Rhode Island, for TCL VOCs, SVOCs, pesticides, PCBs, and percent solids analysis; and UOS in Denver, Colorado, for total metals XRF analysis. Sample analytical results are discussed in detail in Section 4.0 and summarized in the tables in Appendix A.

3.2 GROUNDWATER SAMPLING

U.S. EPA and START originally identified 10 groundwater sampling locations at Sites I and N. Groundwater samples were collected to determine if contamination leached from the surface impoundments to groundwater. Temporary monitoring wells were installed at Site N to determine if a hydraulic gradient existed between the site and Dead Creek; however, because of the presence of construction debris, one groundwater sample was collected from Site I (TW01) and six temporary wells were installed at Site N (TW02, TW06, TW07, TW08, TW09, and TW10). Temporary wells TW04 and TW05 were not installed because auger refusal occurred several times before groundwater was encountered. One groundwater sample was collected from Site I, and six groundwater samples were collected from Site N. Also, one duplicate groundwater sample was collected from TW06, and a MS/MSD sample was collected from TW09. One equipment rinsate sample was collected from the pump and tubing used to collect the groundwater samples.

At Site N, temporary groundwater monitoring wells were installed using a Geoprobe™. A solid rod was advanced to approximately 11 to 18 feet bgs to the estimated depth below the groundwater table based on trenching activities. The rod was extracted, and the temporary well was installed in the borehole. Temporary wells were constructed of 1-inch-diameter polyvinyl chloride (PVC) pipe with 10 feet of slotted screen. TW09 was constructed with 5 feet of screen. A water-level meter was then lowered into each well to gauge the depth to groundwater. The average depth to groundwater at Site N ranged from 8 to 11 feet bgs. Plastic tubing connected to a peristaltic pump was then lowered into each temporary well to purge the groundwater and collect the groundwater samples. The inlet to the tubing was lowered to middle of the water column. Groundwater was purged at each location until the water was visibly clear, and the appropriate sample jars were filled. Groundwater samples were labeled with the site, "GW" for groundwater, and the temporary well number (such as "09"). Thus, for example, sample Site N-GW09 indicates a groundwater sample collected from temporary well TW09 at Site N.

The groundwater sample at Site I (Site I-GW01) was collected through the Geoprobe™ rod (no temporary well was constructed) using a slotted rod attached to the end of the rod string. The rod was advanced to approximately 21 feet bgs, and the depth to groundwater was measured at 17 feet bgs. During groundwater purging and sampling, an excessive amount of very fine silt was observed in the water and pumping was limited.

The groundwater samples were sent to U.S. EPA CLP laboratories for analysis. Specifically, samples were shipped to ChemTech, New Jersey, for TAL metals analysis; SWOK in Broken Arrow, Oklahoma, for dioxins and furans analysis; and Ceimic in Narragansett, Rhode Island, for TCL VOCs, SVOCs, pesticides, and PCB analysis. Limited analysis were performed on the groundwater sample from Site I (Site I-GW01), with priority placed on pesticides and VOCs. Sample analytical results are discussed in detail in Section 4.0 and summarized in the tables in Appendix A.

An elevation survey was also conducted at Site N to determine the elevations of the tops of the temporary monitoring wells casings relative to an on-site datum. The temporary groundwater monitoring wells were left in place and allowed to equilibrate with the groundwater table. The following week, the wells were gauged using a water level meter to determine the depth to water relative to the top of casing. The table below summarizes the groundwater elevations at Site N. Based on well elevation data, groundwater at the site flows northwest towards Dead Creek.



4.0 ANALYTICAL RESULTS

START obtained laboratory analytical results for the 10 soil and 7 groundwater investigative samples collected from Sites I and N. In addition, quality control samples were collected of one duplicate soil sample, one duplicate groundwater sample, and an equipment rinsate sample from the plastic tubing and stainless-steel rods used to collect groundwater samples. ChemTech, a U.S. EPA CLP laboratory in Mountainside, New Jersey, analyzed the soil and groundwater samples for TAL metals. Ceimic, a U.S. EPA CLP laboratory in Narragansett, Rhode Island, analyzed soil and groundwater samples for TCL VOCs, SVOCs, pesticides, PCBs, and percent solids. SWOK, a U.S. EPA CLP laboratory in Broken Arrow, Oklahoma, analyzed soil and groundwater samples for dioxins and furans. UOS of Denver, Colorado, analyzed soil samples for metals using an XRF. Tables A-1 through A-10 in Appendix A summarize sample analytical results.

Soil sample analytical results were compared to U.S. EPA Region 9 preliminary remedial goals (PRG) for industrial direct contact exposure pathways and U.S. EPA Region III risk-based concentrations (RBC) for the industrial soil exposure pathway. Groundwater sample analytical results were compared to U.S. EPA Region 9 PRGs for residential tap water and U.S. EPA Region III RBCs for tap water. Tables A-11 and A-12 in Appendix A compare soil and groundwater sample analytical results, respectively, to U.S. EPA Region 9 PRGs and U.S. EPA Region III RBCs.

Metals were detected at concentrations exceeding screening levels in all soil and groundwater investigative samples. Arsenic (10 samples) and iron (one sample) were present at concentrations exceeding screening levels in soil samples. In groundwater samples, aluminum (one sample), arsenic (four samples), barium (one sample), cadmium (one sample), iron (six samples), manganese (seven samples), nickel (one sample), and vanadium (one sample) were present at concentrations exceeding screening levels.

Pesticides and PCBs were detected at concentrations exceeding screening levels in six soil (Site I-T1-SS01, Site I-T1-SS02, Site I-T1-SS03, Site I-T1-SS04, Site N-T1-SS01, and Site N-T1-SS03) and no groundwater investigative samples. The pesticides and PCBs present at concentrations exceeding screening levels in the soil samples include Aroclor-1248 (four samples); Aroclor-1260 (six samples); 4,4'-DDT (one sample), and aldrin (one sample).

SVOCs were detected at concentrations exceeding screening levels in six soil (Site I-T1-SS01, Site I-T1-SS02, Site I-T1-SS04, Site N-T1-SS01, Site N-T1-SS03, and Site N-T2-SS02) and one groundwater (Site N-GW09) investigative samples. The SVOCs present at concentrations exceeding screening levels in the soil investigative samples include benzo(a)anthracene (two samples); benzo(a)pyrene (five samples); benzo(b)fluoranthene (one sample); dibenzo(a,h)anthracene (two samples); hexachlorobenzene (one sample); indeno(1,2,3-cd)pyrene (one sample); and pentachlorophenol (three samples). Napthalene exceeded its screening level in the groundwater investigative samples.

VOCs were detected at concentrations exceeding screening levels in two soil (Site I-T1-SS01 and Site I-T1-SS03) and two groundwater (Site I-GW01 and Site N-GW02) investigative samples. The VOCs present at concentrations exceeding screening levels in the soil investigative samples include 1,4-dichlorobenzene (one sample) and benzene (one sample). The VOCs present at concentrations exceeding screening levels in the groundwater investigative samples include 1,4-dichlorobenzene (one sample); benzene (one sample); chlorobenzene (one sample); and methylene chloride (one sample).

The total toxicity equivalence (TEQ) for all dioxins and furans represents 2,3,7,8-TCDD. The total TEQ was detected at concentrations exceeding its screening level in two soil (Site I-T1-SS02 and Site N-T1-SS03) and two water (Site N-GW06 and Site N-GW09) investigative samples.



5.0 SUMMARY

Sites I and N are both located in Sauget, St. Clair County, Illinois. Site I covers about 19 acres and was originally used as a sand and gravel pit that received industrial and municipal wastes. Site I was part of the "Sauget-Monsanto Landfill," which operated from 1931 to 1957. Site I is bordered by Queeny Avenue to the south, Falling Springs Road and the village of Sauget municipal building (including the fire department to the east, Alton and Southern Railroads to the north and east). This investigation focuses on an area of interest at the eastern edge of Site I next to the Village of Sauget municipal building. The remainder of Site I was investigated in July 2002 as described in a letter report prepared by Tetra Tech and dated February 26, 2003.

In October 2003, START collected investigative soil samples from 10 trench locations (four at Site I and six at Site N) and groundwater samples from seven boring and temporary well locations at Sites I and N. All samples were analyzed for pesticides, PCBs, TAL metals, and TCL SVOCs, and TCL VOCs. Select soil and groundwater samples were also analyzed for dioxins and furans. All soil samples were also screened for total metals using XRF technology. Groundwater and soil sample analytical results were compared to U.S. EPA Region 9 PRGs and U.S. EPA Region III RBCs. Sample results indicate the presence of dioxins and furans, metals, pesticides, PCBs, SVOCs, and VOCs at concentrations above screening levels in both soil and groundwater at both Site I and N.



APPENDIX A
DATA SUMMARY TABLES
(20 Pages)



TA. A-1
SUMMARY OF TAL METALS ANALYTICAL RESULTS IN SOIL SAMPLES FROM SITES I AND N

Sample No.	Site I-T1-SS01	Site I-T1-SS02	Site I-T1-SS02D	Site I-T1-SS03	Site I-T1-SS04	Site N-T1-SS01	Site N-T1-SS02	Site N-T1-SS03	Site N-T2-SS01	Site N-T2-SS02	Site N-T3-SS01
Sampling Date	10/07/2003	10/07/2003	10/07/2003	10/07/2003	10/07/2003	10/08/2003	10/08/2003	10/08/2003	10/07/2003	10/07/2003	10/08/2003
Analyte											
Aluminum	2,700	3,200	4,000	8,290	3,480	5,040	4,160	3,770	3,740	4,760	1,980
Antimony	2.4 J	88.0 J	18.8 J	3.2 J	18.2 J	8.5 J	1.7 UJ	4.3 J	1.8 UJ	1.8 UJ	2.6 J
Arsenic	6.8 J	7.0 J	6.4 J	5.3 J	4.2 J	23.1 J	6.4 J	8.2 J	5.7 J	4.0 J	1.8 J
Barium	6,760	394	419	1110	229	327	941	171	113	176	2230
Beryllium	0.29	0.30	0.32	0.26	0.30	0.58	0.40	0.45	0.48	0.45	0.21
Cadmium	9.1	3.0	2.1	9.4	2.9	3.1	0.12 U	2.4	1.7	0.40	0.14 R
Calcium	11,500	23,800	31,800	17,900	17,400	53,300	18,900	56300	75,200	69,400	27,200
Chromium	19.9 J	22.8 J	26.7 J	60.9 J	10.5 J	74.2 J	9.6 J	22.8 J	29.3 J	11.7 J	46.0 J
Cobalt	13.8	5.8	5.9	6.9	4.8	9.5	6.4	6.2	6.4	5.2	5.8
Copper	228 J	254 J	363 J	180 J	45.1 J	414 J	29.5 J	102 J	64.0 J	27.7 J	64.0 J
Iron	13,400	25,100	19,500	13,400	10,400	35,300	11,800	34400	35,600	11,600	163,000
Lead	360 J	3,070 J	1,480 J	450 J	4,080 J	822 J	67.6 J	427 J	366 J	179 J	58.5 J
Magnesium	1,880	2,780	3,710	2,180	4,270	3,930	4,060	5920	4,870	8,580	1,940
Manganese	109	291	273	170	167	2,120	193	354	572	289	236
Mercury	1.9 J	1.1 J	1.9 J	1.6 J	0.52 J	0.28 J	0.10 J	2.5 J	0.060 UJ	0.28 J	0.18 J
Nickel	56.8	39.1	31.3	27.2	29.4	41.3	16.1	27.7	30.6	14.4	23.2
Potassium	438 J	555 J	868 J	644 J	704 J	747 J	911 J	769 J	872 J	898 J	448 J
Selenium	0.68 J	1.1 J	0.87 J	0.88 J	0.60 J	0.90 J	0.66 J	0.46 UJ	0.47 UJ	0.95 J	1.3 J
Silver	0.35 UJ	2.9 J	0.51 J	0.38 UJ	0.36 UJ	2.2 J	0.36 UJ	0.36 UJ	0.37 UJ	0.38 UJ	0.40 UJ
Sodium	453	258	294	424	219	205	132 U	196	229	138 U	148 U
Thallium	1.0 J	1.1 U	1.1 U	1.1 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.1 U	1.2 J
Vanadium	66.9	13.7	15.2	32.3	66.1	50.0	14.5	17.8	12.5	16.3	11.4
Zinc	686	609	546	606	433	934	114	955	438	184	349

Notes:

All results are in milligrams per kilogram.

- J = The result is an estimated quantity.
- R = The result was rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
- TAL = Target analyte list
- U = The analyte was analyzed for but not detected above the reported quantitation limit.
- UJ = The analyte was analyzed for but not detected above the reported quantitation limit, which is approximate and may be inaccurate or imprecise.

TAE - 2
SUMMARY OF XRF METALS ANALYTICAL RESULTS IN SOIL SAMPLES FROM SITES I AND N

Location	Antimony	Arsenic	Barium	Cadmium	Calcium	Chromium (HI)	Chromium (LO)	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum
Industrial Direct Contact PRG ^a	410	2	67,000	450	NA	450	450	1,900	41,000	100,000	750	19,000	310	5,100
Soil Industrial RBC ^b	410	2	72,000	510	NA	3,100	3,100	20,000	41,000	310,000	NA	20,000	NA	5,100
Site I-T1-SS01	57 U	77 U	130 U	210 U	1,800 J	440 U	400 J	1,300 U	170 U	3,400 U	82 U	600 U	110 U	9 U
Site I-T1-SS02	90 J	230 U	1,600	210 U	29,000	470 J	350 U	1,300 U	590	42,000	2,300	610 J	110 U	9 J
Site I-T1-SS02D	67 J	220 U	1,500	210 U	26,000	440 U	350 U	1,300 U	240 J	39,000	2,200	930 J	110 U	9 U
Site I-T1-SS03	57 U	77 U	4,200	210 U	20,000	910 J	430 J	1,300 U	170 U	30,000	330	600 U	110 U	9 U
Site I-T1-SS03	71 J	77 U	2,500	210 U	19,000	830 J	350 U	1,300 U	210 J	32,000	400	900 J	110 U	10 J
Site I-T1-SS04	64 J	100 U	730	210 U	20,000	440 U	350 U	1,300 U	170 U	17,000	1,000	600 U	110 U	9 U
Site N-T2-SS01	57 U	120 J	640	210 U	64,000	440 U	350 U	1,300 U	170 U	20,000	630	1,100 J	110 U	9 U
Site N-T2-SS02	57 U	77 U	910	210 U	69,000	1,100 J	350 U	1,300 U	170 U	24,000	240 J	720 J	110 U	9 U
Site N-T1-SS01	57 U	110 U	1,700	210 U	34,000	440 U	350 U	1,300 U	570 J	78,000	1,100	3,900	110 U	16 J
Site N-T1-SS02	57 U	77 U	3,100	210 U	16,000	490 J	350 U	1,300 U	170 U	16,000	82 U	600 U	110 U	9 U
Site N-T1-SS03	57 U	77 U	1,000	210 U	39,000	440 U	350 U	1,300 U	170 U	34,000	450	810 J	110 U	9 J
Site N-T3-SS01	440	77 U	3,800	210 U	10,000	920 J	350 U	1,400 J	170 U	593,806	82 U	3,900	110 U	9 U

Location	Nickel	Potassium	Rubidium	Selenium	Silver	Strontium	Thorium	Tin	Titanium	Uranium	Zinc	Zirconium
Industrial Direct Contact PRG ^a	20,000	NA	NA	5,100	5,100	100,000	NA	100,000	NA	200	100,000	NA
Soil Industrial RBC ^b	20,000	NA	NA	5,100	5,100	610,000	NA	610,000	4,100,000	200	310,000	NA
Site I-T1-SS01	140 U	2,200 U	32 U	57 U	130 U	44 U	11 U	120 J	570 U	27 U	170 U	30 U
Site I-T1-SS02	140 U	12,000	67 J	57 U	130 U	190	22 J	180 J	2,000	27 U	720	170
Site I-T1-SS02D	160 J	9,500	60 J	57 U	130 U	180	11 U	210 J	1,600 J	27 U	690	130
Site I-T1-SS03	230 J	15,000	76 J	57 U	130 U	240	12 J	120 J	2,900	27 U	620	220
Site I-T1-SS03	140 U	13,000	76 J	57 U	130 U	190	11 U	110 U	1,900	27 U	780	220
Site I-T1-SS04	140 U	12,000	70 J	57 U	130 U	180	11 U	170 J	950 J	27 U	540 J	240
Site N-T2-SS01	140 U	11,000	56 J	57 U	130 U	200	11 U	110 U	1,700 J	27 U	430 J	130
Site N-T2-SS02	140 J	14,000	69 J	57 U	130 U	230	11 U	130 J	2,300	27 U	200 J	180
Site N-T1-SS01	240 J	10,000	65 J	57 U	130 U	160	11 U	240 J	2,100	27 U	1,300	180
Site N-T1-SS02	140 U	14,000	72 J	57 U	130 U	220	11 U	110 U	1,100 J	27 U	170 J	170
Site N-T1-SS03	140 U	15,000	59 J	57 U	130 U	210	11 U	200 J	3,300	27 U	970	190
Site N-T3-SS01	1,100	2,300 J	44 J	57 U	130 U	83 J	11 U	760	570 U	27 U	550 J	54 J

Notes:

All results are in milligrams per kilogram.

HI	=	High-level analysis
J	=	The result is an estimated quantity.
LO	=	Low-level analysis
NA	=	Not available
PRG	=	Preliminary remediation goal
RBC	=	Risk-based concentration
U	=	The analyte was analyzed for but not detected above the reported sample quantitation limit.
U.S. EPA	=	U.S. Environmental Protection Agency
XRF	=	X-ray fluorescence
a	=	U.S. EPA Region IX PRG
b	=	U.S. EPA Region III RBC

SUMMARY OF PESTICIDES AND PCB ANALYTICAL RESULTS IN SOIL SAMPLES FROM SITES I AND N

Sample No.	Site I-T1-SS01	Site I-T1-SS02	Site I-T1-SS02D	Site I-T1-SS03	Site I-T1-SS04	Site N-T1-SS01	Site N-T1-SS02	Site N-T1-SS03	Site N-T2-SS01	Site N-T2-SS02	Site N-T3-SS01
Sampling Date	10/7/2003	10/7/2003	10/7/2003	10/7/2003	10/7/2003	10/8/2003	10/8/2003	10/8/2003	10/7/2003	10/7/2003	10/8/2003
Analyte											
4,4'-DDD	700	1,100	650 J	330 J	1,800 J	4.1 J	3.9 U	3.6 U	3.9 U	4.1 U	4.4 U
4,4'-DDE	44 J	430 U	180 J	85 J	410 U	4.0 U	3.9 U	32 J	3.9 U	4.1 U	4.4 U
4,4'-DDT	670 J	18,000	41 U	140 J	2300 J	13 J	3.9 U	34 J	9.6 J	4.1 U	4.4 U
Aldrin	100 J	800	200	91	210 U	2.0 U	2.0 U	30 J	2.2	2.1 U	9.0
Alpha-BHC	20 U	220 U	21 U	20 U	210 U	2.0 U	2.0 U	1.9 U	2.0 U	2.1 U	2.3 U
Alpha-chlordane	20 U	220 U	21 U	20 U	210 U	3.7 J	2.0 U	1.9 U	2.0 U	2.1 U	2.3 U
Aroclor-1016	390 U	4,300 U	410 U	390 U	4,100 U	40 U	39 U	36 U	39 U	41 U	44 U
Aroclor-1221	800 U	8,600 U	830 U	800 U	8,400 U	80 U	79 U	74 U	79 U	84 U	90 U
Aroclor-1232	390 U	4,300 U	410 U	390 U	4,100 U	40 U	39 U	36 U	39 U	41 U	44 U
Aroclor-1242	390 U	4,300 U	410 U	390 U	4,100 U	40 U	39 U	36 U	39 U	41 U	44 U
Aroclor-1248	3,300 J	19,000	5400 J	4,300 J	5,100 J	40 U	39 U	740 J	67 J	41 U	44 U
Aroclor-1254	390 U	4,300 U	410 U	390 U	4,100 U	40 U	39 U	36	39 U	41 U	44 U
Aroclor-1260	7,000 J	11,000	18,000	9,200	58,000	40 U	39 U	1,500 J	110 J	41 U	44 U
Beta-BHC	20 U	220 U	24 J	20 U	210 U	2.0 U	2.0 U	3.5 J	2.0 U	2.1 U	2.3 U
Delta-BHC	20 U	220 U	21 U	20 U	210 U	2.0 U	2.0 U	1.9 U	2.0 U	2.1 U	2.3 U
Dieldrin	40	430 U	140	73	410 U	17 J	3.9 U	7.8 J	3.9 U	17	4.4 U
Endosulfan I	20 U	220 U	21 U	20 U	210 U	2.0 U	2.0 U	1.9 U	2.0 U	2.1 U	2.3 U
Endosulfan II	39 U	430 U	200 J	39 U	1400 J	4.0 U	3.9 U	24 J	3.9 U	4.1 U	22 J
Endosulfan Sulfate	39 U	430 U	41 U	39 U	410 U	4.0 U	3.9 U	32 J	3.9 U	4.1 U	4.4 U
Endrin	39 U	430 U	41 U	39 U	590	4.0 U	3.9 U	28 J	3.9 U	4.1 U	4.4 U
Endrin aldehyde	39 U	430 U	41 U	39 U	410 U	4.0 U	3.9 U	3.6 U	3.9 U	4.1 U	4.4 U
Endrin ketone	330 J	430 U	41 U	39 U	410 U	4.0 U	3.9 U	44 J	3.9 U	4.1 U	4.4 U
Gamma-BHC (lindane)	20 R	220 U	21 U	20 U	210 U	2.0 U	2.0 U	2.6 J	2.0 U	2.1 U	2.3 U
Gamma-chlordane	130	220 U	21 U	20 U	210 U	8.9 J	2.0 U	1.9 U	2.0 U	2.5	2.3 U
Heptachlor	20 R	220 U	21 U	20 U	210 U	2.0 U	2.0 U	29 J	2.0 U	2.1 U	2.3 U
Heptachlor epoxide	20 U	220 U	21 U	20 U	210 U	2.0 U	2.0 U	1.9 U	2.0 U	2.1 U	2.3 U
Methoxychlor	200 U	2,200 U	210 U	200 U	2,100 U	20 U	20 U	74 J	20 U	21 U	23 U
Toxaphene	2,000 U	22,000 U	2,100 U	2,000 U	21,000 U	200 U	200 U	190 U	200 U	210 U	230 U

Notes:

All results are in micrograms per kilogram.

- J = The result is an estimated quantity.
 PCB = Polychlorinated biphenyl
 R = The result was rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
 U = The analyte was analyzed for but not detected above the reported sample quantitation limit.

TABLE A-4
SUMMARY OF TCL SVOC ANALYTICAL RESULTS IN SOIL SAMPLES FROM SITES I AND N

Sample No.	Site I-T1-SS01	Site I-T1-SS02	Site I-T1-SS02D	Site I-T1-SS03	Site I-T1-SS04
Sampling Date	10/7/2003	10/7/2003	10/7/2003	10/7/2003	10/7/2003
Units	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Analyte					
1,1'-Biphenyl	190,000 U	2,600 U	1,200 U	60,000 U	410 J
2,2'-oxybis(1-Chloropropane)	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
2,4,5-Trichlorophenol	460,000 U	6,400 U	3,100 U	150,000 U	3,100 U
2,4,6-Trichlorophenol	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
2,4-Dichlorophenol	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
2,4-Dimethylphenol	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
2,4-Dinitrophenol	460,000 U	6,400 U	3,100 U	150,000 U	3,100 U
2,4-Dinitrotoluene	190,000 R	2,600 U	1,200 U	60,000 U	1,200 U
2,6-Dinitrotoluene	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
2-Chloronaphthalene	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
2-Chlorophenol	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
2-Methylnaphthalene	190,000 U	2,600 U	1,200 U	60,000 U	160 J
2-Methylphenol	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
2-Nitroaniline	460,000 U	6,400 U	3,100 U	150,000 U	3,100 U
2-Nitrophenol	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
3,3'-Dichlorobenzidine	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
3-Nitroaniline	460,000 U	6,400 U	3,100 U	150,000 U	3,100 U
4,6-Dinitro-2-methylphenol	460,000 U	6,400 U	3,100 U	150,000 U	3,100 U
4-Dromophenyl-phenylether	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
4-Chloro-3-methylphenol	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
4-Chloroaniline	190,000 U	2,600 U	1,200 U	60,000 U	360 J
4-Chlorophenyl-phenyl ether	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
4-Methylphenol	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
4-Nitroaniline	460,000 U	6,400 U	3,100 U	150,000 U	3,100 U
4-Nitrophenol	460,000 U	6,400 UJ	3,100 UJ	150,000 UJ	3,100 UJ
Acenaphthene	190,000 UJ	1,300 J	600 J	60,000 U	140 J
Acenaphthylene	190,000 U	540 J	180 J	60,000 U	1,200 U
Acetophenone	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
Anthracene	190,000 U	8,400	3700	60,000 U	170 J
Atrazine	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
Benzaldehyde	190,000 UJ	2,600 UJ	1,200 UJ	60,000 UJ	1,200 UJ
Benzo(a)anthracene	190,000 U	17,000	6500	60,000 U	440 J
Benzo(a)pyrene	190,000 U	11,000	4100	60,000 U	530 J
Benzo(b)fluoranthene	190,000 U	8,600	3700	60,000 U	480 J
Benzo(g,h,i)perylene	190,000 U	5,400 J	1,900	60,000 U	270 J
Benzo(k)fluoranthene	190,000 U	12,000 J	4000 J	60,000 U	570 J
bis(2-Chloroethoxy)methane	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
bis-(2-Chloroethyl)ether	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
bis(2-ethylhexyl)phthalate	190,000 U	2,600 UJ	650 J	60,000 UJ	1,200 UJ
Butylbenzylphthalate	190,000 U	2,600 UJ	1,200 UJ	60,000 UJ	1,200 UJ
Caprolactam	190,000 U	2,600 UJ	1,200 UJ	60,000 UJ	1,200 UJ
Carbazole	190,000 U	1,300 J	460 J	60,000 U	1,200 U
Chrysene	190,000 U	15,000	6000	60,000 U	690 J
Dibenzo(a,h)anthracene	190,000 U	2,400 J	950 J	60,000 U	1,200 U
Dibenzofuran	190,000 U	1,600 J	620 J	60,000 U	130 J
Diethylphthalate	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
Dimethylphthalate	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
di-n-Butylphthalate	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
di-n-Octylphthalate	190,000 U	2,600 UJ	1,200 UJ	60,000 UJ	1,200 UJ

TABLE A-4
SUMMARY OF TCL SVOC ANALYTICAL RESULTS IN SOIL SAMPLES FROM SITES I AND N

Sample No.	Site I-T1-SS01	Site I-T1-SS02	Site I-T1-SS02D	Site I-T1-SS03	Site I-T1-SS04
Sampling Date	10/7/2003	10/7/2003	10/7/2003	10/7/2003	10/7/2003
Units	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Analyte					
Fluoranthene	190,000 U	28,000	13,000	60,000 U	390 J
Fluorene	190,000 U	4,100	1700	60,000 U	190 J
Hexachlorobenzene	190,000 U	630 J	540 J	60,000 U	1,200 U
Hexachlorobutadiene	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
Hexachlorocyclo-pentadiene	190,000 U	2,600 UJ	1,200 UJ	60,000 UJ	1,200 UJ
Hexachloroethane	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
Indeno(1,2,3-cd)pyrene	190,000 U	5,300	1,900	60,000 U	320 J
Isophorone	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
Naphthalene	190,000 U	2,600 U	1,200 U	60,000 U	270 J
Nitrobenzene	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
N-nitroso Diphenylamine	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
N-nitroso-di-n Propylamine	190,000 R	2,600 U	1,200 U	60,000 U	1,200 U
Pentachlorophenol	470000 J	10,000	72,000	150,000 U	640 J
Phenanthrene	190,000 U	16,000	8800	60,000 U	530 J
Phenol	190,000 U	2,600 U	1,200 U	60,000 U	1,200 U
Pyrene	190,000 U	29,000	12,000	60,000 U	570 J

TABLE A-4
SUMMARY OF TCL SVOC ANALYTICAL RESULTS IN SOIL SAMPLES FROM SITES I AND N

Sample No.	Site N-T1-SS01	Site N-T1-SS02	Site N-T1-SS03	Site N-T2-SS01	Site N-T2-SS02	Site N-T3-SS01
Sampling Date	10/8/2003	10/8/2003	10/8/2003	10/7/2003	10/7/2003	10/8/2003
Units	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Analyte						
1,1'-Biphenyl	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
2,2'-oxybis(1-Chloropropane)	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
2,4,5-Trichlorophenol	3,000 U	15,000 U	4,600 U	4,900 U	1,000 U	1,100 U
2,4,6-Trichlorophenol	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
2,4-Dichlorophenol	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
2,4-Dimethylphenol	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
2,4-Dinitrophenol	3,000 U	15,000 U	4,600 U	4,900 U	1,000 U	1,100 U
2,4-Dinitrotoluene	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
2,6-Dinitrotoluene	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
2-Chloronaphthalene	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
2-Chlorophenol	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
2-Methylnaphthalene	320 J	5,800 U	860 J	1,900 U	420 U	440 U
2-Methylphenol	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
2-Nitroaniline	3,000 U	15,000 U	4,600 U	4,900 U	1,000 U	1,100 U
2-Nitrophenol	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
3,3'-Dichlorobenzidine	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
3-Nitroaniline	3,000 U	15,000 U	4,600 U	4,900 U	1,000 U	1,100 U
4,6-Dinitro-2-methylphenol	3,000 U	15,000 U	4,600 U	4,900 U	1,000 U	1,100 U
4-Dromophenyl-phenylether	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
4-Chloro-3-methylphenol	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
4-Chloroaniline	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
4-Chlorophenyl-phenyl ether	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
4-Methylphenol	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
4-Nitroaniline	3,000 U	15,000 U	4,600 U	4,900 U	1,000 U	1,100 U
4-Nitrophenol	3,000 UJ	15,000 UJ	4,600 UJ	4,900 UJ	1,000 UJ	1,100 UJ
Acenaphthene	400 J	5,800 U	1,800 U	1,200 J	46 J	440 UJ
Acenaphthylene	140 J	5,800 U	1,800 U	1,900 U	420 U	440 U
Acetophenone	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
Anthracene	300 J	5,800 U	920 J	1,900 U	110 J	63 J
Atrazine	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
Benzaldehyde	1,200 UJ	5,800 UJ	1,800 UJ	1,900 UJ	420 UJ	440 UJ
Benzo(a)anthracene	820 J	5,800 U	2900	1,900 U	570	160 J
Benzo(a)pyrene	880 J	5,800 U	2,400	1,900 U	490	140 J
Benzo(b)fluoranthene	1,200	5,800 U	2000	240 J	450	150 J
Benzo(g,h,i)perylene	540 J	5,800 U	1,100 J	1,900 U	97 J	440 U
Benzo(k)fluoranthene	930 J	5,800 U	2100	1,900 U	560	120 J
bis(2-Chloroethoxy)methane	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
bis-(2-Chloroethyl)ether	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
bis(2-ethylhexyl)phthalate	380 J	5,800 UJ	1,000 J	840 J	420 UJ	550 J
Butylbenzylphthalate	1,200 UJ	5,800 UJ	1,800 UJ	1,900 UJ	420 UJ	440 UJ
Caprolactam	1,200 UJ	5,800 UJ	1,800 UJ	1,900 UJ	420 UJ	440 UJ
Carbazole	1,200 U	5,800 U	1,800 U	1,900 U	73 J	440 U
Chrysene	1,100 J	5,800 U	2700	350 J	630	170 J
Dibenzo(a,h)anthracene	210 J	5,800 U	480 J	1,900 U	110 J	440 U
Dibenzofuran	310 J	5,800 U	1,800 U	1,900 U	420 U	46 J
Diethylphthalate	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
Dimethylphthalate	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
di-n-Butylphthalate	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
di-n-Octylphthalate	1,200 UJ	5,800 UJ	1,800 UJ	1,900 UJ	420 UJ	440 UJ

TABLE A-4
SUMMARY OF TCL SVOC ANALYTICAL RESULTS IN SOIL SAMPLES FROM SITES I AND N

Sample No.	Site N-T1-SS01	Site N-T1-SS02	Site N-T1-SS03	Site N-T2-SS01	Site N-T2-SS02	Site N-T3-SS01
Sampling Date	10/8/2003	10/8/2003	10/8/2003	10/7/2003	10/7/2003	10/8/2003
Units	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg	ug/Kg
Analyte						
Fluoranthene	1600	730 J	5700	720 J	1300	350 J
Fluorene	330 J	5,800 U	260 J	310 J	47 J	48 J
Hexachlorobenzene	1,200 U	5,800 U	3,000	1,900 U	420 U	440 U
Hexachlorobutadiene	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
Hexachlorocyclo-pentadiene	1,200 UJ	5,800 UJ	1,800 UJ	1,900 UJ	420 UJ	440 UJ
Hexachloroethane	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
Indeno(1,2,3-cd)pyrene	540 J	5,800 U	1300 J	1,900 U	310 J	85 J
Isophorone	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
Naphthalene	390 J	5,800 U	3900	1,900 U	420 U	440 U
Nitrobenzene	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
N-nitroso Diphenylamine	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
N-nitroso-di-n Propylamine	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
Pentachlorophenol	3,000 U	15,000 U	20000	230 J	1,000 U	100 J
Phenanthrene	1300	650 J	3700	280 J	750	270 J
Phenol	1,200 U	5,800 U	1,800 U	1,900 U	420 U	440 U
Pyrene	1600	780 J	6400	940 J	1,400	400 J

Notes:

All results are in micrograms per kilogram.

J = The result is an estimated quantity.
R = The result was rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.
SVOC = Semivolatile organic compound
TCL = Target compound list
U = The analyte was analyzed for but not detected above the reported sample quantitation limit.
UJ = The analyte was analyzed for but not detected above the reported quantitation limit, which is approximate.

TABLE A-5
SUMMARY OF TCL VOC ANALYTICAL RESULTS IN SOIL SAMPLES FROM SITES I AND N

Sample No.	Site I-T1-SS01	Site I-T1-SS02	Site I-T1-SS02D	Site I-T1-SS03	Site I-T1-SS04
Sampling Date	10/7/2003	10/7/2003	10/7/2003	10/7/2003	10/7/2003
Units	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg
Analyte					
1,1,1-Trichloroethane	7,700 U	17 U	15 U	7,900 U	12 U
1,1,2,2-Tetrachloroethane	7,700 U	17 U	15 U	7,900 U	12 U
1,1,2-Trichloro-1,2,2-trifluoroethane	7,700 UJ	17 U	15 U	7,900 UJ	12 UJ
1,1,2-Trichloroethane	7,700 U	17 U	15 U	7,900 U	12 U
1,1-Dichloroethane	7,700 U	17 U	15 U	7,900 U	12 U
1,1-Dichloroethene	7,700 U	17 U	15 UJ	7,900 U	12 U
1,2,4-Trichlorobenzene	100,000	36	11 J	10,,000	12
1,2-Dibromo-3-chloropropane	7,700 U	17 U	15 U	7,900 U	12 R
1,2-Dibromoethane	7,700 U	17 U	15 U	7,900 U	12 U
1,2-Dichlorobenzene	28,000	7 J	6 J	7,900 U	12 U
1,2-Dichloroethane	7,700 U	17 U	15 U	7,900 U	12 U
1,2-Dichloropropane	7,700 U	17 U	15 U	7,900 U	12 U
1,3-Dichlorobenzene	7,700 UJ	18	13 J	8,000	4 J
1,4-Dichlorobenzene	110,000	120	75	52,000	53
2-Butanone	7,700 U	13 J	10 J	7,900 U	12 U
2-Hexanone	7,700 U	17 U	15 U	7,900 U	12 U
4-Methyl-2-pentanone	7,700 U	17 U	15 U	7,900 U	12 U
Acetone	7,700 U	44	32	7,900 U	28
Benzene	7,700 U	33	65 J	5000 J	26
Bromodichloromethane	7,700 U	17 U	15 U	7,900 U	12 U
Bromoform	7,700 U	17 U	15 U	7,900 U	12 U
Bromomethane	7,700 U	17 U	15 U	7,900 U	12 U
Carbon Disulfide	7,700 U	17 U	15 U	7,900 U	12 U
Carbon tetrachloride+A58	7,700 U	17 U	15 U	7,900 U	12 U
Chlorobenzene	19,000	190	170 J	84,000	190
Chloroethane	7,700 U	17 U	15 U	7,900 U	12 U
Chloroform	7,700 U	17 U	15 U	7,900 U	12 U
Chloromethane	7,700 U	17 U	15 U	7,900 U	12 U
cis-1,2-Dichloroethene	7,700 U	17 U	15 U	7,900 U	12 U
cis-1,3-Dichloropropene	7,700 U	17 U	15 U	7,900 U	12 U
Cyclohexane	7,700 U	5 J	6 J	7,900 U	3 J
Dibromochloromethane	7,700 U	17 U	15 U	7,900 U	12 U
Dichlorodifluoromethane	7,700 U	17 U	15 U	7,900 U	12 U
Ethylbenzene	7,700 U	17 U	15 U	770 J	6 J
Isopropylbenzene	7,700 U	17 U	15 U	7,900 U	12 U
Methyl acetate	7,700 U	17 U	15 U	7,900 U	12 U
Methyl tert-butyl ether	7,700 U	17 U	15 U	7,900 U	12 U
Methylcyclohexane	890 J	7 J	8 J	7,900 UJ	5 J
Methylene chloride	7,700 UJ	17 UJ	15 UJ	7,900 UJ	12 UJ
Styrene	7,700 U	17 U	15 U	7,900 U	12 U
Tetrachloroethene	7,700 U	17 U	15 U	7,900 U	12 U
Toluene	7,700 UJ	3 J	3 J	1,100 J	2 J
trans-1,2-Dichloroethene	7,700 U	17 U	15 U	7,900 U	12 U
trans-1,3-Dichloropropene	7,700 U	17 U	15 U	7,900 U	12 U
Trichloroethene	7,700 U	17 U	15 UJ	7,900 U	12 U
Trichlorofluoromethane	7,700 U	17 U	15 U	7,900 U	12 U
Vinyl chloride	7,700 U	3 J	3 J	7,900 U	12 U
Xylenes (total)	7,700 U	17 U	2 J	7,900 U	1 J

TABLE A-5
SUMMARY OF TCL VOC ANALYTICAL RESULTS IN SOIL SAMPLES FROM SITES I AND N

Sample No.	Site N-T1-SS01	SS02	Site N-T1-SS03	Site N-T2-SS01	Site N-T2-SS02	Site N-T3-SS01
Sampling Date	10/8/2003	10/8/2003	10/8/2003	10/7/2003	10/7/2003	10/8/2003
Units	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg	µg/Kg
Analyte						
1,1,1-Trichloroethane	14 U	11 U	1,300 U	14 U	13 U	15 U
1,1,2,2-Tetrachloroethane	14 U	11 U	1,300 U	14 U	13 U	15 U
1,1,2-Trichloro-1,2,2-trifluoroethane	14 U	11 U	1,300 UJ	14 U	13 U	15 U
1,1,2-Trichloroethane	14 U	15	1,300 U	14 U	13 U	15 U
1,1-Dichloroethane	14 U	11 U	1,300 U	14 U	13 U	15 U
1,1-Dichloroethene	14 U	11 U	1,300 U	14 U	13 U	15 U
1,2,4-Trichlorobenzene	14 U	11 U	860 J	14 U	13 U	15 U
1,2-Dibromo-3-chloropropane	14 U	11 U	1,300 U	14 U	13 U	15 U
1,2-Dibromoethane	14 U	11 U	1,300 U	14 U	13 U	15 U
1,2-Dichlorobenzene	14 U	11 U	1000 J	14 U	13 U	15 U
1,2-Dichloroethane	14 U	11 U	1,300 U	14 U	13 U	15 U
1,2-Dichloropropane	14 U	11 U	1,300 U	14 U	13 U	15 U
1,3-Dichlorobenzene	14 U	11 U	1,300 U	14 U	13 U	15 U
1,4-Dichlorobenzene	14 U	11 U	1,800 J	2 J	13 U	15 U
2-Butanone	14 U	11 U	1,300 U	27	13 U	15 U
2-Hexanone	14 U	130	1,300 U	14 U	13 U	15 U
4-Methyl-2-pentanone	14 U	11 U	1,300 U	14 U	13 U	15 U
Acetone	49	18	1,300 U	62	12 J	18
Benzene	14 U	11 U	1,300 U	13 J	13 U	15 U
Bromodichloromethane	14 U	11 U	1,300 U	14 U	13 U	15 U
Bromoform	14 U	11 U	1,300 U	14 U	13 U	15 U
Bromomethane	14 U	11 U	1,300 U	14 U	13 U	15 U
Carbon Disulfide	14 U	3 J	1,300 U	3 J	13 U	5 J
Carbon tetrachloride+A58	14 U	11 U	1,300 U	14 U	13 U	15 U
Chlorobenzene	14 U	11 U	1,300 J	2 J	13 U	15 U
Chloroethane	14 U	11 U	1,300 U	14 U	13 U	15 U
Chloroform	14 U	11 U	1,300 U	14 U	13 U	15 U
Chloromethane	14 U	11 U	1,300 U	14 U	13 U	15 U
cis-1,2-Dichloroethene	14 U	11 U	1,300 U	14 U	13 U	15 U
cis-1,3-Dichloropropene	14 U	11 U	1,300 U	14 U	13 U	15 U
Cyclohexane	14 U	1 J	1,300 U	5 J	13 U	15 U
Dibromochloromethane	14 U	11 U	1,300 U	14 U	13 U	15 U
Dichlorodifluoromethane	14 U	11 U	1,300 U	14 U	13 U	15 U
Ethylbenzene	14 U	11 U	3,200 J	2 J	13 U	15 U
Isopropylbenzene	14 U	16	7,600 J	14 U	13 U	15 U
Methyl acetate	14 U	11 U	520 J	14 U	13 U	15 U
Methyl tert-butyl ether	14 U	11 U	1,300 U	14 U	13 U	15 U
Methylcyclohexane	2 J	5 J	560 J	6 J	1 J	2 J
Methylene chloride	14 UJ	11 UJ	2800 UJ	14 UJ	13 UJ	15 UJ
Styrene	14 U	11 U	1,300 U	14 U	13 U	15 U
Tetrachloroethene	14 U	11 U	1,300 U	14 U	13 U	15 U
Toluene	14 U	9 J	1,300 UJ	10 J	13 U	3 J
trans-1,2-Dichloroethene	14 U	11 U	1,300 U	14 U	13 U	15 U
trans-1,3-Dichloropropene	14 U	11 U	1,300 U	14 U	13 U	15 U
Trichloroethene	14 U	11 U	1,300 U	14 U	13 U	15 U
Trichlorofluoromethane	14 U	11 U	1,300 U	14 U	13 U	15 U
Vinyl chloride	14 U	11 U	1,300 U	14 U	13 U	15 U
Xylenes (total)	14 U	4 J	8,800 J	5 J	13 U	2 J

Notes:

All results are in micrograms per kilogram.

J = The result is an estimated quantity.
TCL = Target compound list
VOC = Volatile organic compound
U = The analyte was analyzed for but not detected above the reported sample quantitation limit.
UJ = The analyte was analyzed for but not detected above the reported quantitation limit, which is approximate.

TABLE A-6
SUMMARY OF DIOXINS AND FURANS ANALYTICAL RESULTS IN SOIL AND GROUNDWATER SAMPLES FROM SITES I AND N

Sample Code	Site I-T1-SS02	Site I-T1-SS02D	Site N-T1-SS03	Site N-GW06	Site N-GW09
Unit	ng/kg	ng/kg	ng/kg	pg/L	pg/L
Analyte					
2,3,7,8-TCDD	1,079	182.0	199.5	1.631 U	0.962 U
1,2,3,7,8-PeCDD	5,968	357.1	599.4	1.586 U	1.081 U
1,2,3,4,7,8-HxCDD	18,350	675.7	862.9	1.800 U	1.590 U
1,2,3,6,7,8-HxCDD	34,580	3,545	9,578	1.721 U	1.550 U
1,2,3,7,8,9-HxCDD	35,350	1,614	2,271	1.648 U	1.483 U
1,2,3,4,6,7,8-HpCDD	873,400	82,200	430,400	40.34 B	39.630 B
OCDD	2,066,000 B	653,900 B	1,941,000 B	502.8 B	445.1 B
2,3,7,8-TCDF	1,711	1,166	29,740	1.517 U	1.304 U
1,2,3,7,8-PeCDF	2,689	716.5	7,673	1.144 U	0.800 U
2,3,4,7,8-PeCDF	2,434	1,106.00	27,750	0.991 U	0.736 U
1,2,3,4,7,8-HxCDF	26,190	9,219.00	241,800	6.743	2.613
1,2,3,6,7,8-HxCDF	26,070	7,217	72,230	0.853 U	1.049 U
2,3,4,6,7,8-HxCDF	2,233	331.3	3,854	0.913 U	1.061 U
1,2,3,7,8,9-HxCDF	795.7	39.25 U	415.1	0.986 U	1.141 U
1,2,3,4,6,7,8-HpCDF	264,000	41,190	716,500	31.370 B	13.610 B
1,2,3,4,7,8,9-HpCDF	25,840	3,631	28,890	1.007 U	0.985 U
OCDF	1,474,000 B	209,700 B	1,079,000 B	123.8 B	60.370 B
Total TEQ	35,120	5,460	65,610	2.018	1.299
Total TCDDs	19,050.0	2,497	7,450	1.631 U	0.962 U
Total PeCDDs	21,210	357.1	913.7	1.586 U	1.081 U
Total HxCDDs	350,100	24,230	24,820	1.648 U	1.483 U
Total HpCDDs	1,593,000	160,900	800,700	82.590	72.890
Total TCDFs	8,609	4,040	32,160	1.517 U	1.304 U
Total PeCDFs	17,030	5,857	77,460	0.991 U	0.736 U
Total HxCDFs	214,900	46,900	405,900	11.200	7.730
Total HpCDFs	1,723,000	170,900	1,094,000	31.370	13.610

Notes:

- ng/kg = Nanogram per kilogram
- pg/L = Picogram per liter
- B = Compound detected in blank
- TEQ = Toxicity equivalence
- U = The analyte was analyzed for but not detected above the reported sample quantitation limit.

TAL A-7
SUMMARY OF METALS ANALYTICAL RESULTS IN GROUNDWATER SAMPLES FROM SITES I AND N

Sample No.	Site I-GW01	Site N-GW02	Site N-GW06	Site N-GW06D	Site N-GW07	Site N-GW08	Site N-GW09	Site N-GW10
Sampling Date	10/08/2003	10/08/2003	10/08/2003	10/08/2003	10/08/2003	10/08/2003	10/08/2003	10/08/2003
Analyte								
Aluminum	189,000 J	839 J	1,250 J	1,640 J	937 J	606 J	364 J	23,600 J
Antimony	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	7.2 U	8.0
Arsenic	226	4.4 U	126	125	8.9 J	14.8 J	4.4 U	36.7 J
Barium	6520	357	928	998	665	304	410	1550
Beryllium	42.6	0.10 U	0.22	0.25	0.16	0.14	0.10 U	2.9
Cadmium	27.4	0.50 U	0.50 U	0.50 U	0.61	0.50 U	0.50 U	8.9
Calcium	7,800,000	193,000	234,000	245,000	242,000	138,000	188,000	350,000
Chromium	226	1.1 U	2.5	2.4	2.2	9.6	1.1 U	49.8
Cobalt	528	1.4 U	16.6	17.7	15.6	2.8	1.4 U	37.0
Copper	393	13.7 J	2.9 J	2.2 J	4.1 J	4.8 J	2.2 J	772
Iron	918,000 J	18,200 J	63,600 J	66,200 J	2,550 J	26,200 J	23,000 J	50,900 J
Lead	941	92.4	3.6	3.9	3.9	18.0	6.6	1,410
Magnesium	1,750,000	30,500	70,300	73,600	72,500	23,600	33,100	60,300
Manganese	88,300 J	1,360	5,810	5,990	6,970	1,430	801	1,880
Mercury	2.6	0.23 J	0.27 J	0.26 J	0.10 UJ	0.10 U	0.10 U	0.52 J
Nickel	1220	2.5	20.6	25.1	31.0	10.0	1.8	94.5
Potassium	95,700 J	18,900 J	13,400 J	13,800 J	14,100 J	5,220 J	22,200 J	9,090 J
Selenium	1.9 R	1.9 U	1.9 UJ	1.9 U	4.0 J	1.9 UJ	2.1 J	1.9 U
Silver	1.5 UJ	1.5 UJ	1.5 UJ	1.5 UJ	1.5 UJ	1.5 UJ	1.5 UJ	1.5 UJ
Sodium	113,000	14200	15,000	15,000	12,000	6,830	24,200	7480
Thallium	4.2 R	4.2 UJ	4.2 UJ	4.2 UJ	4.2 R	4.2 UJ	4.2 UJ	4.2 UJ
Vanadium	1,040	1.6 U	3.5	3.8	1.6 U	2.7	1.6 U	101
Zinc	2,840	133	36.8 J	43.9 J	40.9 J	49.5 J	120 J	2,140

Notes:

= All results are in micrograms per liter.

J = The result is an estimated quantity.

R = The result was rejected due to serious deficiencies in meeting quality control criteria. The analyte may or may not be present in the sample.

TAL = Target analyte list

U = The analyte was analyzed for but not detected above the reported sample quantitation limit.

UJ = The analyte was analyzed for but not detected above the reported quantitation limit, which is approximate.

TABLE A-8
SUMMARY OF PESTICIDES ANALYTICAL RESULTS IN GROUNDWATER SAMPLES FROM SITES I AND N

Sample No.	Site N-GW02	Site N-GW06	Site N-GW06D	Site N-GW07	Site N-GW08	Site N-GW09	Site N-GW10
Sampling Date	10/8/2003	10/8/2003	10/8/2003	10/8/2003	10/8/2003	10/8/2003	10/8/2003
Analyte							
4,4'-DDD	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U
4,4'-DDE	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U
4,4'-DDT	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U
Aldrin	0.050 U	0.050 U	0.050 UJ	0.050 U	0.050 U	0.050 U	0.050 U
Alpha-bhc	0.050 U	0.050 U	0.050 UJ	0.050 U	0.050 U	0.050 U	0.050 U
Alpha-chlordane	0.050 U	0.050 U	0.050 UJ	0.050 U	0.050 U	0.050 U	0.050 U
Aroclor-1016	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1221	2.0 U	2.0 U	2.0 UJ	2.0 U	2.0 U	2.0 U	2.0 U
Aroclor-1232	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1242	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1248	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1254	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
Aroclor-1260	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U	1.0 U
Beta-bhc	0.050 U	0.050 U	0.050 UJ	0.050 U	0.050 U	0.050 U	0.050 U
Delta-bhc	0.050 U	0.050 U	0.050 UJ	0.050 U	0.050 U	0.050 U	0.050 U
Dieldrin	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan I	0.050 U	0.050 U	0.050 UJ	0.050 U	0.050 U	0.050 U	0.050 U
Endosulfan II	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U
Endosulfan Sulfate	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U
Endrin	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U
Endrin Aldehyde	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U
Endrin Ketone	0.10 U	0.10 U	0.10 UJ	0.10 U	0.10 U	0.10 U	0.10 U
Gamma-bhc (lindane)	0.050 U	0.050 U	0.050 UJ	0.050 U	0.050 U	0.050 U	0.050 U
Gamma-chlordane	0.050 U	0.050 U	0.050 UJ	0.050 U	0.050 U	0.050 U	0.050 U
Heptachlor	0.050 U	0.050 U	0.050 UJ	0.050 U	0.050 U	0.050 U	0.050 U
Heptachlor Epoxide	0.050 U	0.050 U	0.050 UJ	0.050 U	0.050 U	0.050 U	0.050 U
Methoxychlor	0.50 U	0.50 U	0.50 UJ	0.50 U	0.50 U	0.50 U	0.50 U
Toxaphene	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U

Notes:

All results are in micrograms per liter,

U = The analyte was analyzed for but not detected above the reported sample quantitation limit.
UJ = The analyte was analyzed for but not detected above the reported quantitation limit, which is approximate.

TA-9
SUMMARY OF SVOC ANALYTICAL RESULTS IN GROUNDWATER SAMPLES FROM SITES I AND N

Sample No.	Site N-GW010	Site N-GW02	Site N-GW06	Site N-GW06D	Site N-GW07	Site N-GW08	Site N-GW09
Sampling Date	10/8/2003	10/8/2003	10/8/2003	10/8/2003	10/8/2003	10/8/2003	10/8/2003
Analyte							
1,1'-Biphenyl	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,2'-oxybis(1-Chloropropane)	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4,5-Trichlorophenol	25 U	25 U	25 U	25 U	25 U	25 U	25 U
2,4,6-Trichlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dichlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dimethylphenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,4-Dinitrophenol	25 U	25 U	25 U	25 U	25 U	25 U	25 U
2,4-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2,6-Dinitrotoluene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chloronaphthalene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Chlorophenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Methylnaphthalene	10 U	1 J	10 U	10 U	10 U	10 U	8 J
2-Methylphenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Nitroaniline	25 U	25 U	25 U	25 U	25 U	25 U	25 U
2-Nitrophenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3,3'-Dichlorobenzidine	10 U	10 U	10 U	10 U	10 U	10 U	10 U
3-Nitroaniline	25 U	25 U	25 U	25 U	25 U	25 U	25 U
4,6-Dinitro-2-methylphenol	25 U	25 U	25 UJ	25 UJ	25 UJ	25 U	25 U
4-Bromophenyl-phenylether	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloro-3-methylphenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chloroaniline	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Chlorophenyl-phenyl Ether	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methylphenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Nitroaniline	25 U	25 U	25 U	25 U	25 U	25 U	25 U
4-Nitrophenol	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Acenaphthene	10 U	16	10 U	10 U	10 U	10 U	52
Acenaphthylene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetophenone	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Anthracene	10 U	10 U	10 U	10 U	10 U	10 U	1 J
Atrazine	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzaldehyde	10 UJ	10 UJ	10 U	10 U	10 U	10 UJ	10 UJ
Benzo(a)anthracene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(a)pyrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(b)fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(g,h,i)perylene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Benzo(k)fluoranthene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Chloroethoxy)methane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis-(2-Chloroethyl)ether	10 U	10 U	10 U	10 U	10 U	10 U	10 U
bis(2-Ethylhexyl)phthalate	2 J	10 U	2 J	5 J	2 J	10 U	10 U
Butylbenzylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Caprolactam	10 U	10 U	10 U	10 U	10 U	10 U	10 U

SUMMARY OF SVOC ANALYTICAL RESULTS IN GROUNDWATER SAMPLES FROM SITES I AND N

Sample No.	Site N-GW010	Site N-GW02	Site N-GW06	Site N-GW06D	Site N-GW07	Site N-GW08	Site N-GW09
Sampling Date	10/8/2003	10/8/2003	10/8/2003	10/8/2003	10/8/2003	10/8/2003	10/8/2003
Analyte							
Carbazole	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chrysene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzo(a,h)anthracene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dibenzofuran	10 U	3 J	10 U	10 U	10 U	10 U	4 J
Diethylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dimethylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-Butylphthalate	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Di-n-Octylphthalate	10 U	10 U	10 UJ	10 UJ	10 UJ	10 U	10 U
Fluoranthene	10 U	1 J	10 U	10 U	10 U	10 U	3 J
Fluorene	10 U	6 J	10 U	10 U	10 U	10 U	21
Hexachlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorobutadiene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Hexachlorocyclo-pentadiene	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Hexachloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Indeno(1,2,3-cd)pyrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isophorone	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Naphthalene	10 U	2 J	10 U	10 U	10 U	10 U	21
Nitrobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U
n-Nitroso diphenylamine	10 U	10 U	10 U	10 U	10 U	10 U	10 U
n-nitroso-di-n propylamine	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pentachlorophenol	25 U	25 U	25 U	25 U	25 U	25 U	25 U
Phenanthrene	10 U	10 U	10 U	10 U	10 U	10 U	5 J
Phenol	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Pyrene	10 U	10 U	10 U	10 U	10 U	10 U	1 J

Notes:

- J = Microgram per liter
- SVOC = The result is an estimated quantity.
- U = Semivolatile organic compound
- U = The analyte was analyzed for but not detected above the reported sample quantitation limit.
- UJ = The analyte was analyzed for but not detected above the reported quantitation limit, which is approximate.

SUMMARY OF VOC ANALYTICAL RESULTS IN GROUNDWATER SAMPLES FROM SITES I AND N

Sample No.	Site I-GW01	Site N-GW02	Site N-GW06	Site N-GW06D	Site N-GW07	Site N-GW08	Site N-GW09	Site N-GW010
Sampling Date	10/8/2003	10/8/2003	10/8/2003	10/8/2003	10/8/2003	10/8/2003	10/8/2003	10/8/2003
Analyte								
1,1,1-Trichloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloro-1,2,2-trifluoroethane	10 U	10 U	10 UJ	10 UJ	10 UJ	10 U	10 U	10 U
1,1,2-Trichloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2,4-Trichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dibromo-3-chloropropane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dibromoethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,3-Dichlorobenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
1,4-Dichlorobenzene	120	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Butanone	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
2-Hexanone	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-pentanone	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Acetone	42 J	17 J	10 J	10 UJ	5 J	20 J	17 J	15 J
Benzene	2 J	10 U	10 UJ	10 UJ	10 UJ	10 U	10 U	10 U
Bromodichloromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromoform	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Carbon disulfide	10 U	10 U	10 UJ	10 UJ	10 UJ	10 U	10 U	10 U
Carbon tetrachloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	160	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroform	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,2-Dichloroethene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Cyclohexane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Dibromochloromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Dichlorodifluoromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Isopropylbenzene	10 U	10 U	10 U	10 U	10 U	10 U	1 J	10 U
Methyl acetate	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methyl tert-butyl ether	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylcyclohexane	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ	10 UJ
Methylene chloride	51 U	62 J	37 UJ	23 UJ	15 UJ	51 U	49 U	46 U
Styrene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Tetrachloroethene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U

SUMMARY OF VOC ANALYTICAL RESULTS IN GROUNDWATER SAMPLES FROM SITES I AND N

Sample No.	Site I-GW01	Site N-GW02	Site N-GW06	Site N-GW06D	Site N-GW07	Site N-GW08	Site N-GW09	Site N-GW010
Sampling Date	10/8/2003	10/8/2003	10/8/2003	10/8/2003	10/8/2003	10/8/2003	10/8/2003	10/8/2003
Analyte								
Toluene	5 J	6 J	10 UJ	10 UJ	1 J	10 J	6 J	8 J
trans-1,2-Dichloroethene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichloroethene	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Trichlorofluoromethane	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Xylenes (total)	10 U	10 U	10 U	10 U	10 U	10 U	1 J	10 U

Notes:

All results are in micrograms per liter.

- J = The result is an estimated quantity.
 U = The analyte was analyzed for but not detected above the reported sample quantitation limit.
 UJ = The analyte was analyzed for but not detected above the reported quantitation limit, which is approximate.
 VOC = Volatile organic compound

TABLE A-11
SOIL SAMPLE RESULT COMPARISON TO U.S.EPA PRGs AND RBCs

Sample No.	Industrial Direct	Soil Industrial	Site I-T1-SS01	Site I-T1-SS02	Site I-T1-SS03	Site I-T1-SS04	Site N-T1-SS01
Sampling Date	Contact PRG ^a	RBC ^b	10/07/2003	10/07/2003	10/07/2003	10/07/2003	10/08/2003
TAL Metals (mg/kg)							
Arsenic	1.6	3.8	6.8 J	7.0 J	5.3 J	4.2 J	23.1 J
Pesticides and PCBs (µg/kg)							
4,4'-DDT	7,000	17,000	--	18,000	--	--	--
Aldrin	100	340	--	800	--	--	--
Aroclor-1248	740	2,900	3,300 J	19,000	4,300 J	5,100 J	--
Aroclor-1260	740	2,900	7,000 J	11,000	9,200	58,000	1,500 J
SVOCs (µg/kg)							
Benzo(a)anthracene	2,100	7,800	--	17,000	--	--	--
Benzo(a)pyrene	210	780	--	11,000	--	530 J	880 J
Benzo(b)fluoranthene	2,100	7,800	--	8,600	--	--	--
Dibenzo(a,h)anthracene	210	780	--	2,400 J	--	--	--
Indeno(1,2,3-cd)pyrene	2,100	7,800	--	5,300	--	--	--
Pentachlorophenol	9,000	48,000	470,000 J	10,000	--	--	--
VOCs (µg/kg)							
1,4-Dichlorobenzene	7,900	120,000	110,000	--	52,000	--	--
Benzene	1,300	100,000	--	--	5000 J	--	--
Dioxins and Furans (ng/kg)							
Total TEQ	16	19	--	35,120	65,610	--	--

Sample No.	Industrial Direct	Soil Industrial	Site N-T1-SS02	Site N-T1-SS03	Site N-T2-SS01	Site N-T2-SS02	Site N-T3-SS01
Sampling Date	Contact PRG ^a	RBC ^b	10/08/2003	10/08/2003	10/07/2003	10/07/2003	10/08/2003
TAL Metals (mg/kg)							
Arsenic	1.6	3.8	6.4 J	8.2 J	5.7 J	4.0 J	1.8 J
Iron	100,000	310,000	--	--	--	--	163,000
Pesticides and PCBs (µg/kg)							
Aroclor-1260	740	2,900	--	1,500 J	--	--	--
SVOCs (µg/kg)							
Benzo(a)anthracene	2,100	7,800	--	2,900	--	--	--
Benzo(a)pyrene	210	780	--	2,400	--	490	--
Dibenzo(a,h)anthracene	210	780	--	480 J	--	--	--
Hexachlorobenzene	1,100	3,600	--	3,000	--	--	--
Pentachlorophenol	9,000	48,000	--	20,000	--	--	--

TABLE A-11
SOIL SAMPLE RESULT COMPARISON TO U.S.EPA PRGs AND RBCs

Notes:

Bolded results exceed screening levels (either PRG, RBC, or both).

--	= Detected value below screening level or not analyzed for
µg/kg	= Microgram per kilogram
J	= The result is an estimated quantity
mg/kg	= Milligram per kilogram
ng/kg	= Nanogram per kilogram
PCB	= Polychlorinated biphenyl
PRG	= Preliminary remedial goal
RBC	= Risk-based concentration
TAL	= Target analyte list
Total TEQ	= Toxicity equivalence factor represented by 2,3,7,8-TCDD
SVOC	= Semivolatile organic compound
U.S. EPA	= U.S. Environmental Protection Agency
VOC	= Volatile organic compound
^a	U.S. EPA Region IX PRG
^b	U.S. EPA Region III RBC

TABLE A-12
GROUNDWATER SAMPLE RESULT COMPARISON TO U.S. EPA PRGs AND RBCs

Sample No.	Industrial Direct	Tap Water	Site I-GW01	Site N-GW02	Site N-GW06	Site N-GW07	Site N-GW08
Sampling Date	Contact PRG ^a	RBC ^b	10/08/2003	10/08/2003	10/08/2003	10/08/2003	10/08/2003
TAL Metals (mg/L)							
Aluminum	36,000	37,000	189,000 J	--	--	--	--
Arsenic	11	0.045	226	--	126	8.9 J	14.8 J
Barium	2,600	2600	6,520	--	--	--	--
Cadmium	18	18	27.4	--	--	--	--
Iron	11,000	11,000	918,000 J	18,200 J	63,600 J	--	26,200 J
Manganese	880	730	88,300 J	1,360	5,810	6,970	1,430
Nickel	730	730	1,220	--	--	--	--
Vanadium	260	260	1,040	--	--	--	--
SVOCs (µg/L)							
bis(2-Ethylhexyl)Phthalate	4.8	4.8	--	--	--	--	--
Naphthalene	6.2	6.5	--	--	--	--	--
VOCs (µg/L)							
1,4-Dichlorobenzene	0.5	0.47	120	--	--	--	--
Benzene	0.34	0.32	2 J	--	--	--	--
Chlorobenzene	110	110	160	--	--	--	--
Methylene chloride	4.3	4.1	--	62 J	--	--	--
Dioxins and Furans (pg/kg)							
Total TEQ	16	19	--	--	2,018	--	--

Sample No.	Industrial Direct	Tap Water	Site N-GW09	Site N-GW010
Sampling Date	Contact PRG ^a	RBC ^b	10/08/2003	10/08/2003
TAL Metals (mg/L)				
Aluminum	36,000	37,000	--	--
Arsenic	11	0.045	--	36.7 J
Barium	2,600	2600	--	--
Cadmium	18	18	--	--
Iron	11,000	11,000	23,000 J	50,900 J
Manganese	880	730	801	1,880
Nickel	730	730	--	--
Vanadium	260	260	--	--
SVOCs (µg/L)				
bis(2-Ethylhexyl)Phthalate	4.8	4.8	--	--
Naphthalene	6.2	6.5	21	--
Dioxins and Furans (pg/kg)				
Total TEQ	0.45	0.45	1,299	--

TABLE A-12
GROUNDWATER SAMPLE RESULT COMPARISON TO U.S. EPA PRGs AND RBCs

Notes:

Bolded results exceed screening levels (either PRG, RBC, or both).

µg/L	= Microgram per liter
--	= Detected value below screening level or not analyzed for
J	= The result is an estimated quantity.
mg/L	= Milligram per liter
pg/kg	= Picogram per kilogram
PRG	= Preliminary remedial goal
RBC	= Risk-based concentration
SVOC	= Semivolatile organic compound
TAL	= Target analyte list
Total TEQ	= Toxicity equivalence factor represented by 2,3,7,8-TCDD
U.S. EPA	= U.S. Environmental Protection Agency
VOC	= Volatile organic compound

^a U.S. EPA Region IX PRG

^b U.S. EPA Region III RBC

APPENDIX B
PHOTOGRAPHIC LOG
(29 Pages)





Photograph No.: 1
Location: Sauget Site I
Subject: Yellow material on west wall of trench T1
Orientation: West
Date: October 7, 2003



Photograph No.: 2
Location: Sauget Site I
Subject: White material on east wall of trench T1
Orientation: North
Date: October 7, 2003



Photograph No.: 3
Location: Sauget Site I
Subject: Sample Site I - T1 - SS01 and Site I - T1 - SS01 - MS/MSD
Orientation: Downward
Date: October 7, 2003



Photograph No.: 4
Location: Sauget Site I
Subject: Green material from trench T1
Orientation: West
Date: October 7, 2003



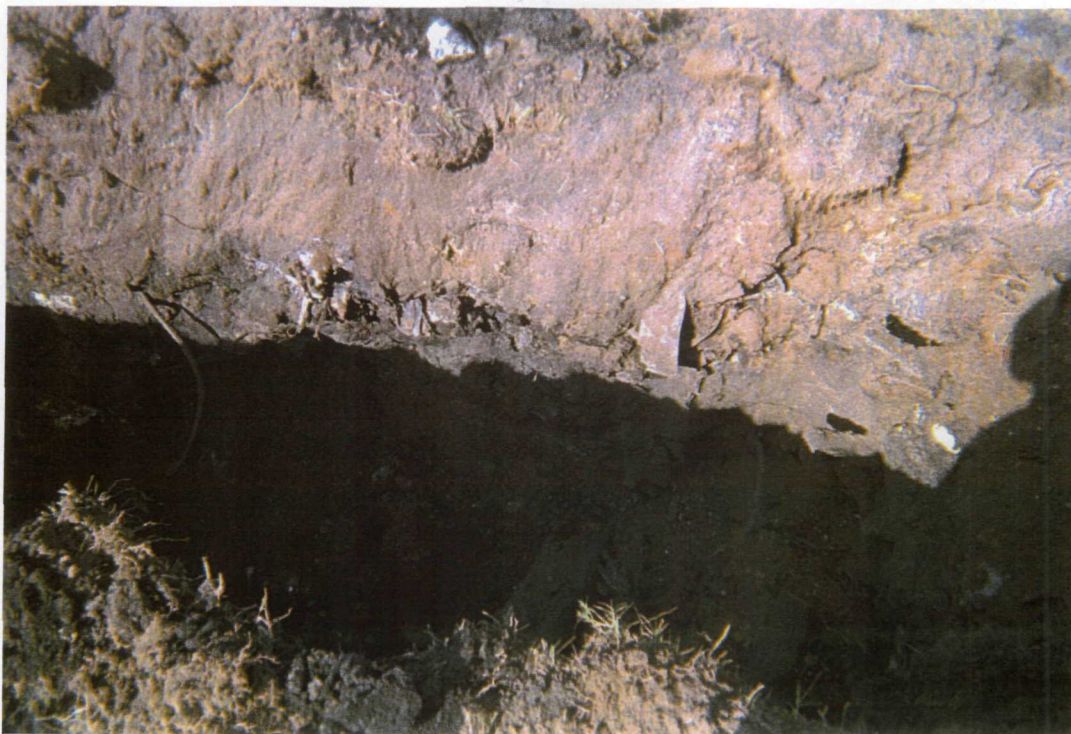
Photograph No.: 5
Location: Sauget Site I
Subject: Black material from trench T1

Orientation: West
Date: October 7, 2003

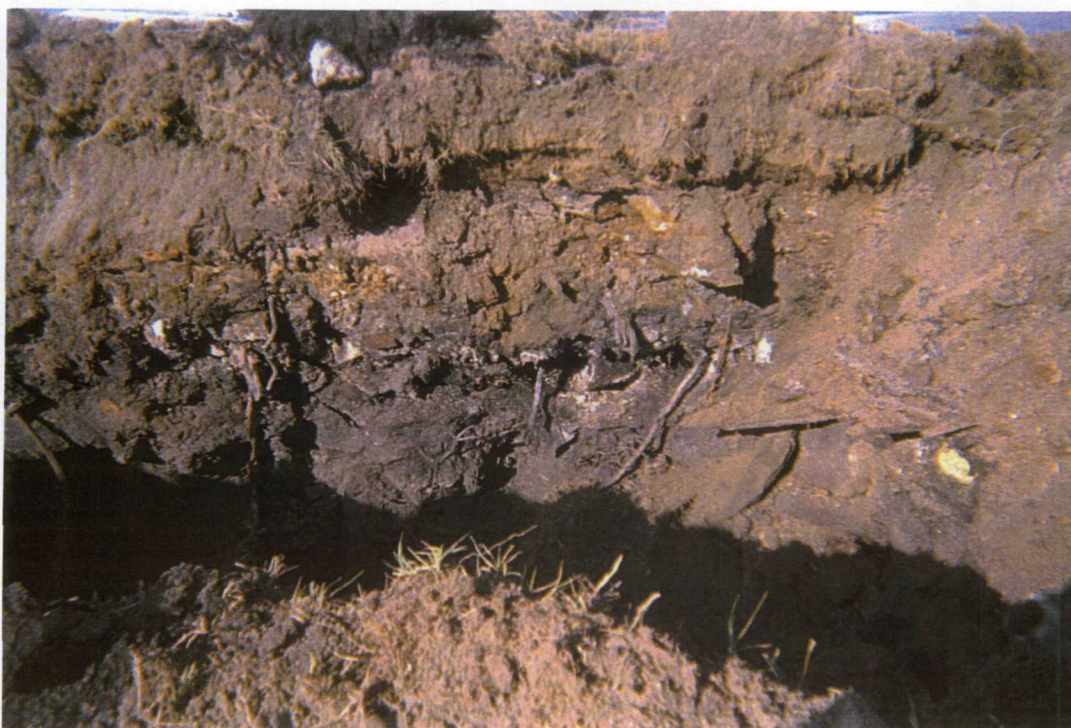


Photograph No.: 6
Location: Sauget Site I
Subject: Sample Site I - T1 - SS02 and Site I - T1 - SS02D

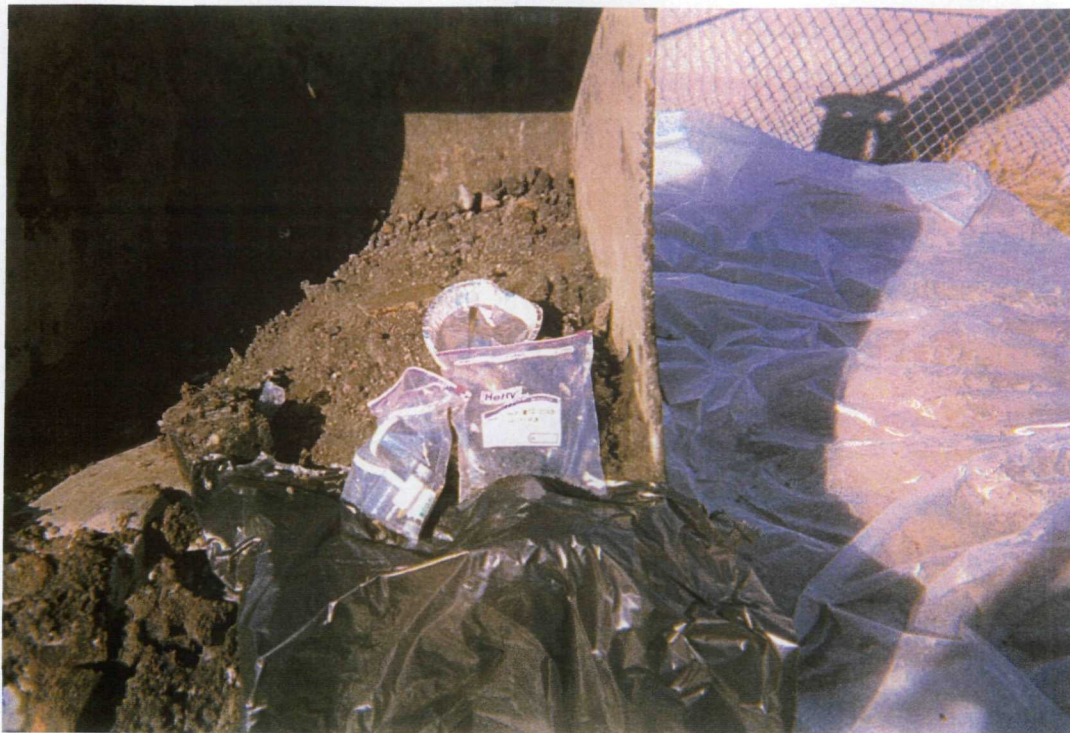
Orientation: West
Date: October 7, 2003



Photograph No.: 7
Location: Sauget Site I
Subject: Catalyst beads on west wall of trench T1
Orientation: West
Date: October 7, 2003



Photograph No.: 8
Location: Sauget Site I
Subject: Catalyst beads on west wall of trench T1
Orientation: West
Date: October 7, 2003



Photograph No.: 9
Location: Sauget Site I
Subject: Sample Site I - T1 - SS03

Orientation: Downward
Date: October 7, 2003



Photograph No.: 10
Location: Sauget Site I
Subject: Broken battery casings in trench T1

Orientation: North
Date: October 7, 2003



Photograph No.: 11
Location: Sauget Site I
Subject: Broken battery casings on west wall of trench T1
Orientation: Northwest
Date: October 7, 2003



Photograph No.: 12
Location: Sauget Site I
Subject: Trench T1 from south end
Orientation: North
Date: October 7, 2003



Photograph No.: 13
Location: Sauget Site I
Subject: Sample Site I - T1 - SS04

Orientation: Downward
Date: October 7, 2003



Photograph No.: 14
Location: Sauget Site I
Subject: Small trench attached to trench T1 to the east towards the concrete parking lot.

Orientation: Downward
Date: October 7, 2003



Photograph No.: 15
Location: Sauget Site I
Subject: Trench T-2

Orientation: Downward
Date: October 7, 2003



Photograph No.: 16
Location: Sauget Site I
Subject: Trench T-3

Orientation: Downward
Date: October 7, 2003



Photograph No.: 17
Location: Sauget Site I
Subject: Site I from north end

Orientation: South
Date: October 7, 2003



Photograph No.: 18
Location: Sauget Site N
Subject: Trench T2 from south end

Orientation: North
Date: October 7, 2003



Photograph No.: 19
Location: Sauget Site N
Subject: Sample Site N - T2 - SS01

Orientation: Downward
Date: October 7, 2003



Photograph No.: 20
Location: Sauget Site N
Subject: Sample Site N - T2 - SS02

Orientation: North
Date: October 7, 2003



Photograph No.: 21
Location: Sauget Site N
Subject: Trench T2 - from south end

Orientation: North
Date: October 7, 2003



Photograph No.: 22
Location: Sauget Site N
Subject: Crushed drums at north end of trench T1

Orientation: South
Date: October 7, 2003



Photograph No.: 23
Location: Sauget Site N
Subject: Sample Site N - T1 - SS01

Orientation: Downward
Date: October 7, 2003



Photograph No.: 24
Location: Sauget Site N
Subject: Sample location Site N - T1 - SS01

Orientation: Downward
Date: October 7, 2003



Photograph No.: 25
Location: Sauget Site N
Subject: Sample Site N - T1 - SS02

Orientation: Downward
Date: October 7, 2003



Photograph No.: 26
Location: Sauget Site N
Subject: Sample Site N - T1 - SS03

Orientation: Downward
Date: October 7, 2003



Photograph No.: 27
Location: Sauget Site N
Subject: Trench T1 looking north from boring location B4
Orientation: North
Date: October 7, 2003



Photograph No.: 28
Location: Sauget Site N
Subject: Debris from trench T1
Orientation: North
Date: October 7, 2003



Photograph No.: 29
Location: Sauget Site N
Subject: Red crushed drum from trench T1

Orientation: Downward
Date: October 7, 2003



Photograph No.: 30
Location: Sauget Site N
Subject: Native sand in trench T1

Orientation: East
Date: October 7, 2003



Photograph No.: 31
Location: Sauget Site N
Subject: South section of trench T1

Orientation: South
Date: October 7, 2003



Photograph No.: 32
Location: Sauget Site N
Subject: South section of trench T1

Orientation: North
Date: October 7, 2003



Photograph No.:	33	Orientation:	North
Location:	Sauget Site N	Date:	October 7, 2003
Subject:	South section of trench T1 after backfilling		



Photograph No.:	34	Orientation:	West
Location:	Sauget Site N	Date:	October 7, 2003
Subject:	Trench T1 B from east end		



Photograph No.: 35
Location: Sauget Site N
Subject: Trench T1 B from west end

Orientation: East
Date: October 7, 2003



Photograph No.: 36
Location: Sauget Site N
Subject: Crushed drums from trench T1 B

Orientation: North
Date: October 7, 2003



Photograph No.:	37	Orientation:	North
Location:	Sauget Site N	Date:	October 7, 2003
Subject:	Red and yellow clay material from trench T3		



Photograph No.:	38	Orientation:	Downward
Location:	Sauget Site N	Date:	October 7, 2003
Subject:	Red material from trench T3		



Photograph No.: 39
Location: Sauget Site N
Subject: Sample Site N - T3 - SS01

Orientation: North
Date: October 7, 2003



Photograph No.: 40
Location: Sauget Site N
Subject: Material from trench T3

Orientation: Northwest
Date: October 7, 2003



Photograph No.: 41
Location: Sauget Site N
Subject: Trench T4

Orientation: Downward
Date: October 7, 2003



Photograph No.: 42
Location: Sauget Site N
Subject: Trench T1 from north end

Orientation: Southwest
Date: October 7, 2003



Photograph No.: 43
Location: Sauget Site N
Subject: Debris material from trench T1

Orientation: West
Date: October 7, 2003



Photograph No.: 44
Location: Sauget Site N
Subject: Debris material from trench T1

Orientation: West
Date: October 7, 2003



Photograph No.: 45
Location: Sauget Site N
Subject: Debris material from trench T1

Orientation: West
Date: October 7, 2003



Photograph No.: 46
Location: Sauget Site N
Subject: Debris material from trench T1

Orientation: West
Date: October 7, 2003



Photograph No.: 47
Location: Sauget Site N
Subject: Debris material from trench T1

Orientation: Northwest
Date: October 7, 2003



Photograph No.: 48
Location: Sauget Site N
Subject: Debris material from trench T1

Orientation: Southwest
Date: October 7, 2003



Photograph No.: 49
Location: Sauget Site N
Subject: Debris material from trench T1

Orientation: North
Date: October 7, 2003



Photograph No.: 50
Location: Sauget Site N
Subject: Backfilling trench T1

Orientation: West
Date: October 7, 2003



Photograph No.: 51
Location: Sauget Site N
Subject: Temporary monitoring well TW - 7

Orientation: Downward
Date: October 7, 2003



Photograph No.: 52
Location: Sauget Site N
Subject: Temporary monitoring well TW-06 and sample containers for groundwater sample Site N-GW-06

Orientation: West
Date: October 7, 2003



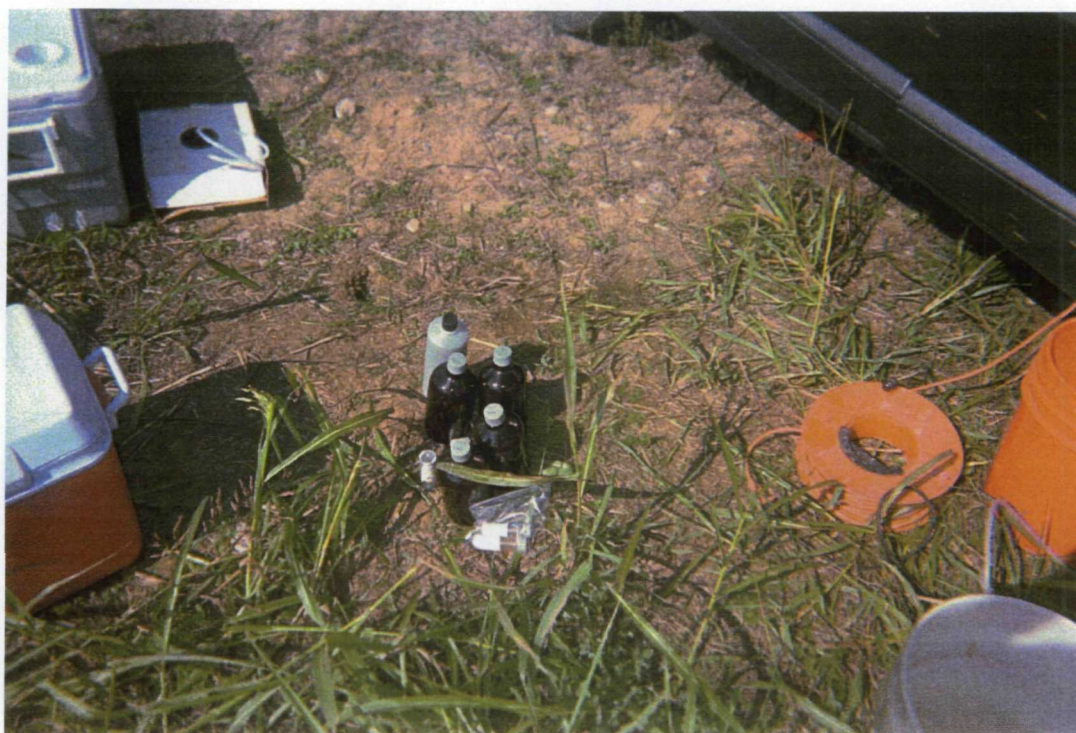
Photograph No.:	53	Orientation:	South
Location:	Sauget Site N	Date:	October 7, 2003
Subject:	Temporary monitoring well TW-07 and sample containers for groundwater sample Site N-GW-07		



Photograph No.:	54	Orientation:	Northeast
Location:	Sauget Site N	Date:	October 7, 2003
Subject:	Temporary monitoring well TW-08 and sample containers for groundwater sample Site N-GW-08		



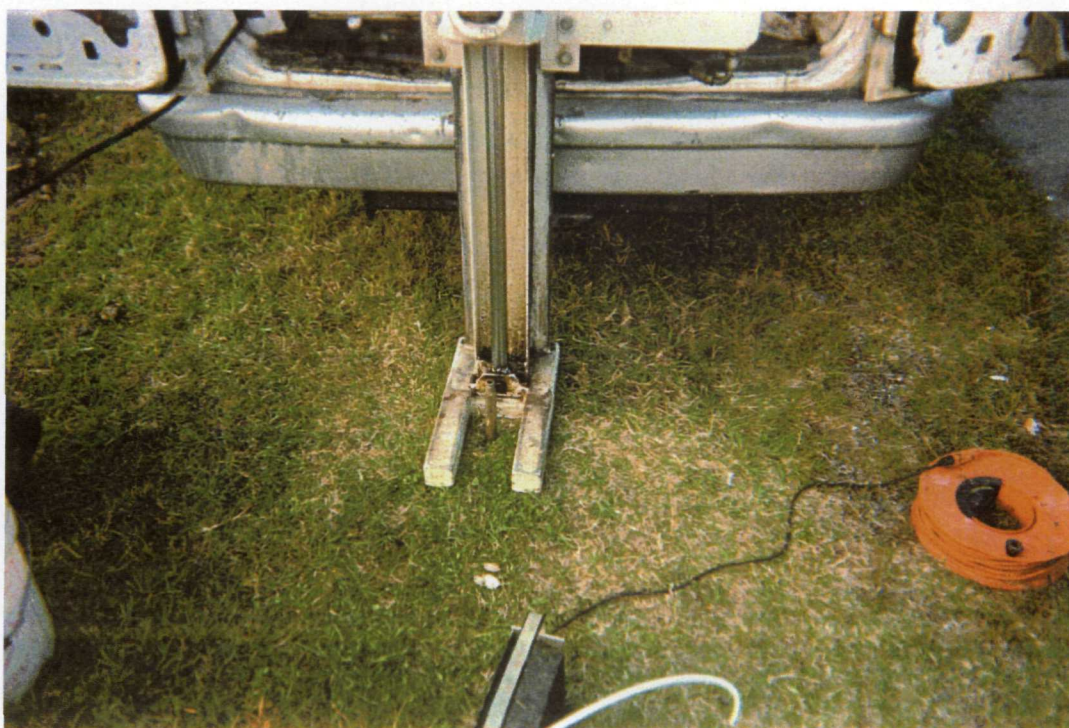
Photograph No.:	55	Orientation:	North
Location:	Sauget Site N	Date:	October 7, 2003
Subject:	Temporary monitoring well TW-09 and sample containers for groundwater sample Site N-GW-09		



Photograph No.:	56	Orientation:	West
Location:	Sauget Site N	Date:	October 7, 2003
Subject:	Temporary monitoring well TW-10 and sample containers for groundwater sample Site N-GW-10		



Photograph No.: 57
Location: Sauget Site N
Subject: Temporary monitoring well TW-02 and sample containers for groundwater sample Site N-GW-02
Orientation: West
Date: October 7, 2003



Photograph No.: 58
Location: Sauget Site I
Subject: Temporary monitoring well TW-01
Orientation: North
Date: October 7, 2003